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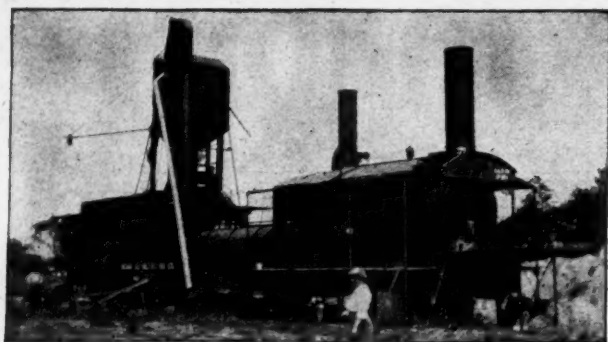
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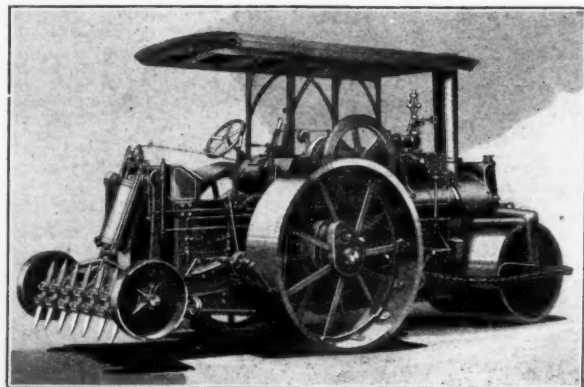
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City officials and civic organizations are particularly requested to send to Municipal Journal and Public Works regularly their annual and special reports.

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The Information Bureau, developed by twenty-one years' research and practical experience in its special field, is at the command of our subscribers at all times and without charge.

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MORE ENGINEERS ORGANIZING.

The president of Queens Borough, New York, is reported to have refused to deal with a committee of Local No. 10,388, Union of Technical Men, which is affiliated with the American Federation of Labor and includes city engineers, surveyors and draughtsmen, which committee has demanded a general wage increase of \$500 a year for every member; saying: "One might as well contemplate a labor union of doctors, lawyers and clergymen."

But startling as it may seem to many, and not least to the engineers themselves, it is apparent that a large proportion of the engineers who work on a wage (as distinguished from a fee) basis are attaching themselves to the A. F. of L. or to the more conservative American Association of Engineers, being urged and almost compelled to this by the development in social conditions since the beginning of the war.

MUNICIPAL BOND BOOM.

During July municipal bonds sold to an amount only once before surpassed or even approached for that month; and the total sale for the first seven months of this year has never before been approximated during a similar period. This includes both state and city borrowing, and is based upon figures reported by the Daily Bond Buyer. The figures given are \$69,696,480 for July and \$378,123,922 for the seven months January to July. The highest previous figure for these seven months was \$349,082,007, in 1914. If the sales follow the precedent of previous years they will continue high during August, and then fall off until the end of the year.

HIGHWAYS AS FEEDERS.

During the war much was said concerning the need of motor truck hauling to supplement the railway hauling of freight between transportation centers. Last month the Highways Transport Committee of the Council of National Defense stated a policy that seemed to imply its belief that such emergency has passed and with it the desirability of such motor traffic. The policy was stated in the following words:

The Highways Transport Committee of the Council of National Defense believes that, in order to promote the best results in the increase of the value of land, the increase of production, the increase of distribution of merchandise and commodities, that adequate highway transportation should be provided through territories not served by rail, electric or water transportation.

The committee appreciates the fact that commercial highway transportation on any of the main traveled highways of the country is valuable in that it provides connection between large industrial centers, and in providing that transportation which is necessary to the health, comfort

and pleasure of the community. Yet the committee believes that such transportation is of questionable value in the encouragement of commerce when running immediately adjacent to rail and waterways between terminals and therefore presumably in direct competition with such facilities.

The committee recognizes the economic disadvantage suffered by the individual producer who lives at a distance from adequate available transportation facilities and the committee also believes that development of the country will be far more rapid when there is efficient rail or other transportation in territories not so supplied at the present time.

In other words, the committee is becoming more and more convinced that the development of efficient rail, electric and water facilities is dependent upon the establishment of highway transportation facilities in territories such as will prove complementary to such rail, electric and waterways systems instead of competing with them.

As a general statement, we believe that the above reasoning is sound. Taking into account all costs, including that of the highways themselves, there can be no question that rail or water transportation is very much

cheaper than that by motor vehicles; and with public regulations of rates, the cost to the public is unquestionably less, in the long run.

There are exceptions to this, however, as during emergencies of sudden or temporary great enlargements of traffic demands that can not be met quickly by increase in rail facilities or that are of such brief duration that such increase would not pay. Also there are certain classes of materials that it is preferable to haul direct from shipper to purchaser, without rehandling at rail terminals, even at increased cost; such as frail materials, household furnishings carried direct from former to future residence of owner, etc.

In general, however, the committee is undoubtedly correct, and the funds, materials and energies used in increasing the mileage of good roads should be devoted more to the feeder roads leading out into districts not now served by railroads than to those directly paralleling railroads.

THE NEW LONDON HOUSING PROJECT

General Plan of Procedure in Carrying Out the Project, Involving a Million and a Quarter Dollars.—Solving Some Grade Problems—Street Making Over Mucky Land—Other Special Features.

By LOUIS L. TRIBUS.*

Several generations had been attempting to instill into the public mind the worth of money; efficiency experts had tried to show where fractions of cents could be saved; business men from small to great endeavored to rub a little more metal off each dollar and the wastes of earlier years had been turned over to secure the remaining values.

And then came the world war, with its countless problems. Result, an unprecedented demand, with haste as the controlling factor and money of little object.

Prior to war days, private capital built new domiciles for workmen in the United States to an aggregate annual value not far from one billion dollars. The war, while tremendously increasing the demand, practically ended such investments.

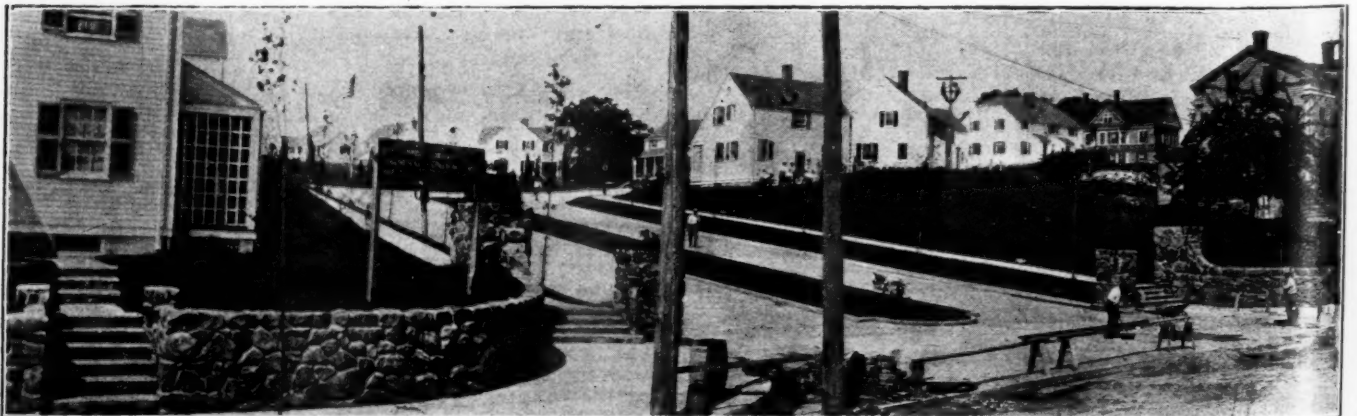
Manufacturers had to scrape together all possible moneys to turn out war products, so could not spare any for house erection. Big pay, however, caused workers to seek better quarters. Obliging, Uncle Sam rose to the occasion, and through the War Department huge cantonments were built for the soldiers, and by the Emergency Fleet and U. S. Housing Corporations thousands of houses had been erected, and many other thousands were contemplated, when the welcome armistice was

signed. War fervor and enthusiasm rapidly abated, munitions and supplies were no longer in demand, overtime work was not needed, and stock taking has begun. Yet houses are more than ever required in large numbers, for approximately one hundred million dollars expended in the Government projects could only meet at best a fraction of the normal demand.

What will Uncle Sam do as a builder and landlord? Will he treat the housing proposition on a common-sense business basis, or will he follow many unfortunate precedents and sell out for a small fraction of the cost, leaving speculators, favored and unfavored, to make handsome profits thereby? Recent congressional action indicates the hope for wise action.

In July, 1918, the United States Housing Corporation was organized under a New York Charter, a bureau of the Department of Labor holding all the stock. Otto M. Eidlitz served as its first president and active manager, succeeded in order by J. W. Alvord and L. K. Sherman, each previously acting as chief engineer.

Among petitions receiving early consideration were those from New London and Groton, Conn. The New London Ship and Engine Co., The Groton Iron Works, the Navy Department's submarine base and general Naval establishments, and other local industries, public and



LOOKING FROM JEFFERSON STREET THROUGH THE MAIN ENTRANCE UP LINCOLN AVENUE.

*Of Tribus & Massa, consulting engineers, New York City.

private, all employed skilled workers in large numbers, yet possessed very inadequate facilities for housing them.

As soon as decision was made to grant the requests, a committee was selected to design and handle the project, each member attending to his own phase of the work, but all acting in consultation so that an harmonious whole might be expeditiously consummated. New York men were selected, Hoppin & Koen as architects, Chas. N. Lowrie as town planner (or landscape architect), and Tribus & Massa as engineers.

The first conferences were held about the end of June, 1918. Before the close of September, land had been selected and surveyed (boundary and topographic); and complete layout and building plans, specifications and estimates had been prepared and approved. On October 9 work was begun by the H. P. Cummings Construction Co. of Ware, Mass., which took the whole contract, subletting the Groton portion to J. Taylor Douglass of New London. Typical Connecticut rocky farm lands were

services, street pavements, curbs, gutters, sidewalks and street lighting; and with the utility corporations for gas, electricity and telephone service and their distribution by pipe and wire. These arrangements in all essentials were made by the engineers, though the legal department carried them to final ratification. The city's public water supply had to be connected up for domestic and fire service, and the city's sewers, sanitary and storm, provided outlets for the project's system.

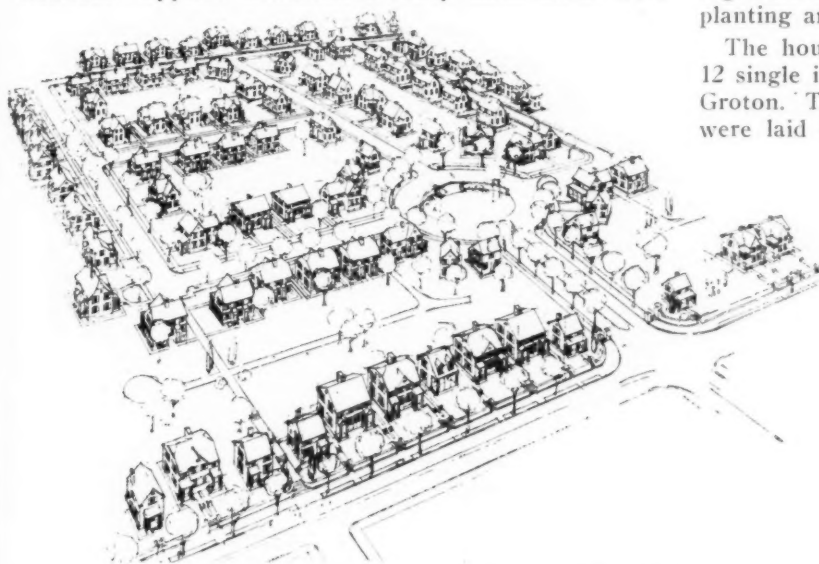
The general plan of procedure was as follows: The engineers made the basic topographic and boundary surveys and borings for sub-surface information. The town planner studied out property grading, street systems (plans and profiles), location of houses and of street lights, shrub and tree planting, etc. The architects designed the houses (some ten types). The engineers designed the utilities, sewers (sanitary, land and storm), water mains, pavements, etc.; laid out all work (including buildings), and supervised all construction, except planting and building erection.

The houses actually erected numbered 52 double and 12 single in New London, and 9 double and 7 single in Groton. The property and public utilities in New London were laid out to accommodate 22 other double and 3 single houses, though full frontage improvements were not carried out for them.

The cost for land, grading, street improvements, houses actually erected, and all overhead will be not far from \$1,200,000; or, averaged for only the 141 families served, equals a total of \$8,500 per residence. The double houses are so constructed that ownership can readily be divided and each part retain its own abundant land and all conveniences. If the balance of the houses planned had been built, the extra cost for construction and all facilities would scarcely have exceeded \$150,000, which would have brought the average for the whole project down to about \$7,200 per family. Allowing the Government's conceded 25 per cent excess cost for war-time conditions, in its partly determined scheme of sale, would make the houses with their very complete facilities

and surroundings a very reasonable and creditable investment at \$5,400. While the plots differ largely in shape and area, something over 3,000 sq. ft. average is allotted for each family. The difference in shape, size and position of lots and houses makes a very attractive variation for possible purchasers.

So far as special construction goes, there was no marked novelty, except the fact that lumber for the houses was all cut in the mill at the site, so that carpenters had little to do but assemble the numbered pieces and nail them in place.



SKETCH OF NEW LONDON PROJECT AS DESIGNED.

This plan was carried out except for a few of the houses. The street along the foreground of the sketch is Jefferson avenue. The passageway up from this along the left, for pedestrians only, contains the alternating steps and inclines shown on one of other illustrations.

purchased, well dotted with boulders and some ledge, virgin territory for city development.

At Groton, the streets and utilities were already in process of installation by the private owners, a number of whose vacant lots the U. S. S. Housing Corporation purchased.

In New London complex agreements had to be made with the city departments, covering mutual proportion of payments vs. assessments, for sewers, water mains and



CONTINUATION OF VIEW ON OPPOSITE PAGE.



STEPS FROM JEFFERSON AVENUE TO COLVER STREET.

All houses have full-height cellars, with concrete or rubble walls, slate roofs, theoretically fireproof stop walls, hot air heating, gas hot water supply and ranges, electric lighting, bathrooms, double floors, and are plastered, painted, stained and papered. Each family has a separate concrete approach sidewalk and walk to the back door.

As the layout partially fronts on one of the main streets of New London, a handsome rubble retaining wall was built the whole street length, both for artistic effect and to better the gradient for the properties fronting upon it, as the land sloped up rapidly. Also, the hillside was cut down nearly level for some 25 or 30 feet back of the houses to give yard room; a bank with a slope of one to one being formed at the rear and protected by seeding and honeysuckle-vine planting. At the top edge of the slope a turf gutter was shaped, having several turfed down-chutes for storm water. At foot of the slope another turfed gutter carries the flow to an outlet tile reaching the main street.

This hillside also gave opportunity for a rather artistic and convenient foot access by steps and inclines to connect the low-level and high-level streets. (See photograph.)

The property was so laid out that at present driving access is quite feasible by way of a brick-paved, boulevard wide street. Ultimately the rear (west) of the property will be connected to a main north and south thoroughfare.

The brick used for this embellished entrance street is laid on a 6-inch concrete foundation and is of the wire-cut lug hillside type placed longitudinally. Two cross grooves on each brick, breaking lines in laying, give specially good footing in connection with the joints and the pavement presents rather of a novel general appearance as of brick standing on end. As yet, little of this type of paving brick has been used, though it promises well.

The other pavements on the project have 2½-inch crushed granite (from the property) for first course, treated with asphalt (penetration); and the upper layer is of 1-inch broken trap rock from near New Haven, covered with a lighter coat of asphalt, and this in turn coated with granite screenings.

A considerable portion of the storm flow collected from the whole area is taken underground. The balance is conducted by concrete and brick gutters to the lower level main street. A number of acres of the original plot were occupied by a shallow pond and swamp. Ditching relieved the surface conditions, and deep tile under-drainage sufficed for draining most of the property; but under the streets quite an area of black muck was excavated to a depth of 5 to 8 feet. This muck, sweetened with lime and partially mixed with lighter soil, has made a splendid top dressing for the whole project. It was

replaced by material from excavations which was better fitted for supporting roads and traffic.

Most of the householders can maintain motor cars if they desire, and use in common, for access to their back yards, the two adjoining concrete entrance sidewalks as runways. Two groups of houses are given special access to the rear of their lots by paved service roads, narrow but still suitable. The corporation built no garages, leaving such luxuries to the individual tenants or owners.

All plots are set out with barberry front hedges, shrubs and vines; and each house even has a folding, umbrella type, clothes line outfit. The streets are lined with well grown young trees.

Electric service wires (light and telephone) come from the rear, so as to avoid poles on the streets except those needed for street lamps.

Monolithic concrete curbs and gutters edge the paved roadways, and turf fills the remaining street space not occupied by sidewalks.

The contract was executed under the direction of a works superintendent, W. F. McCulloch, for most of the time, and Walter C. Brennan for the closing weeks, aided in consultation by the original committee and its resident representatives, but all the time under direct orders from Washington, and being frequently inspected by traveling representatives of the appropriate corporation divisions. Many changes occurred in the operating personnel of the corporation at Washington, but there has been practically no friction from start to finish.

Had it been possible to secure for every one of the forty or fifty projects the most competent and experienced technical and construction men, so many supervisors would have been unnecessary, but under all circumstances it probably worked out to ultimate advantage, even though at times it approached an illustration of the old adage, "Too many cooks, etc."

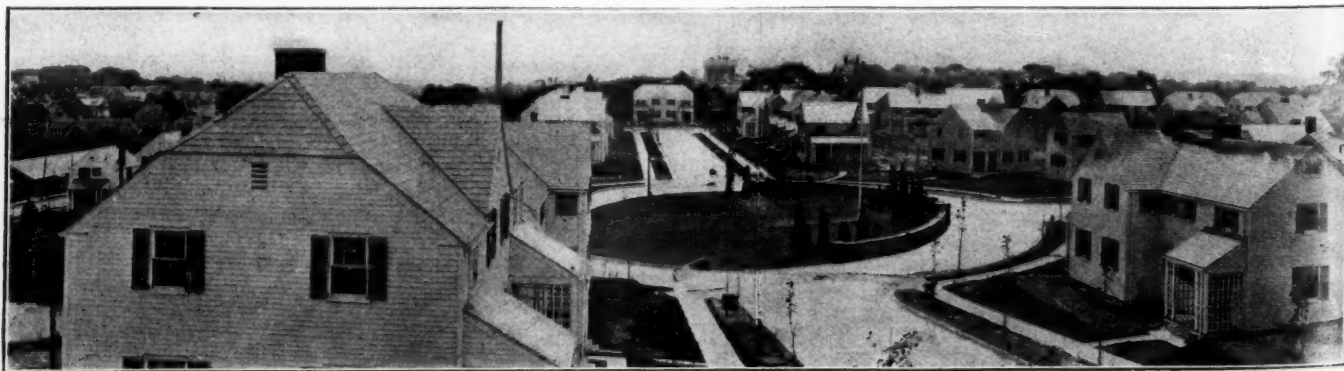
The only severe criticism justly to be made arose out of the war, during and subsequent to its close, in the relationship to "Labor." Practically every demand and even whim or request was yielded to, at the expense of the public purse in most instances.

The very complete development, artistic placing, attractive cottages and pleasing color scheme, will, when trees and shrubs have had time to grow a little, make Uncle Sam's New London project a worthy one.

The Groton project, covering only the erection of comfortable cottages, sandwiched with others on streets already opened, possessed no feature for special description.

WATER POWER IN MAINE.

According to the Maine Public Utilities Commission, there is now available at developed sites in that state 226,560 h. p., based on low water flow of the streams and



LOOKING SOUTHWEST FROM THE NORTH SIDE OF THE PROJECT.
Low buildings at extreme left are the offices of those in charge of the project.

available 95 per cent of the average year; and at undeveloped sites 143,496 h. p., on the same basis. Or, considering the power that is available for 24-hour service during the 60 per cent of the time when more water is flowing, that at developed sites is 391,113 and that at undeveloped 267,155 h. p. This shows that about 59 per cent of the available power of the rivers of the state has already been developed—a high percentage considering how large an area of the state is very thinly settled.

The commission also estimates that, by the development of available sites and storage reservoirs, the power at developed sites may be increased 36 per cent on the low water basis, or 12 per cent on the basis of use for 60 per cent of the year; while at undeveloped sites the available power may be increased 65 per cent on the low water basis, and 22½ per cent on the other basis.

CAN THE CONTRACTOR ASSIGN HIS CONTRACT?

Legal Decisions Setting Forth Conditions Under Which Contracts for Municipal Improvements Can Be Assigned.

By J. SIMPSON.

Contracts for public improvements may be assigned by the contractor provided that is not forbidden by the contract itself or by a state statute or municipal ordinance, and provided that due notice is given to the municipality and its assent is obtained. *Sims v. Hines*, 121 Ind. 534, 23 N. E. 515; *Taber v. Grafmiller*, 109 Ind. 66 (street improvements); *St. Louis v. Clemens*, 42 Mo. 69 (grading, curbing and macadamizing a street); *Ernst v. Kunkle*, 5 Ohio St. 520 (same); *Taylor v. Palmer*, 31 Cal. 240.

When there is nothing in the contract restricting the right of a contractor to transfer his contract to another party, there is no law, in the absence of a state statute on the subject and of any objection on the part of the city, to prevent such a transfer. The transfer may be in parol, and needs no writing to effectuate it. Of course, if the transfer is made on specified conditions, the transferee takes it subject to these conditions. *McCubbin v. City of Atchison*, 12 Kan. 166.

One reason given for the rule that such contracts are assignable is that they are not of a class which stipulate for the personal services, knowledge, skill and experience of another. They are for work which may be done as well by a third person as by the contractor himself in person. *St. Louis v. Clemens*, 42 Mo. 69.

The United States Supreme Court makes the distinction (*Delaware County v. Diebold Safe Co.*, 133 U. S. 473, 494) between contracts, such as for work upon street, held, from the nature of the subject, to imply no personal confidence in the contractor, and so to be assign-

able, and those where the personal care and skill of the contractor is necessarily relied on and so, to that extent, at least, held to be unassignable. See also *Burck v. Taylor*, 152 U. S. 634.

A contract for the construction of a bridge was entered into with a city, which had a bond with sureties for the due performance of the work by the contractor. During the progress of the work, the contractor assigned the contract without the city's consent, and renounced all interest in it and refused to go on with the work. It was held, *Pike v. City of Waltham*, 168 Mass. 581, that the city had a right to refuse to allow the assignee to go on with the work. If the assignee had undertaken and completed the work as the agent of the original contractor, the contract would have been properly performed.

On the same principle, *Devlin v. New York*, 63 N. Y. 8, it was held that the assignment by the contractor of a contract with a municipal corporation for work (in this instance street cleaning) is not against public policy so long as the corporation retains the personal obligation of the original contractor and his sureties and in the absence of anything prohibiting it in the statute authorizing the work, such an assignment is valid. It does not terminate the contract or authorize the corporation to repudiate it.

There is no doubt that assignments of claims arising out of such contracts, that is, of money due or to become due under the contracts, are valid and enforceable. *Gordon v. Jefferson City*, 111 Mo. App. 23, 85 S. W. 617; *Diggins v. Hartshorne*, 108 Cal. 154; *Bernstein v. Downs*, 112 Cal. 197; *Hall v. Buffalo*, 1 Reyes (N. Y.) 196; *Parker v. Syracuse*, 31 N. Y. 376; *Herman v. Oconto*, 100 Wis. 391; *Brackett v. Blake*, 7 Metc. (Mass) 335.

It is held in some cases that there is a wide distinction between the assignment of a contract and the assignment of moneys falling due thereunder after performance. Where a city has breached the contract, the contractor would become entitled to receive the sums of money which had been earned thereunder, and to recover for such damages as might have been occasioned by the breach. An assignment, therefore, of these claims would not be an assignment of the contract, but of a cause of action against the city for the recovery of moneys which it was obligated to pay; and, in this view of the question, there would be no violation of a clause in the contract prohibiting its assignment with the city's consent. Such a clause is in these cases held to be a restriction solely upon the assignment of the contract, as such, and not of the moneys earned thereunder, which the city is bound to pay. Such an assignment is not an assignment of the contract. *Brace v. City of Gloversville*, 167 N. Y. 452, 60 N. E. 779; *Snyder v. City of New York*, 77 N. Y. Supp. 637.

It is well settled that a contract may be assigned so as to vest in the assignee the equitable right to the proceeds, although the money may not have been due or earned at the time of the assignment. It is often done by builders and other contractors to enable them to procure the materials necessary to fulfil their contracts. The fact that the debtor is a municipal corporation does not change the right to assign money not yet earned. *Philadelphia v. Lockhardt*, 73 Pa. St. 211.

The case, however, may be different where the assignment is only of a part of the claim against the municipality, and the municipality has not assented to the severance of its liability. In *Cook v. City of Menasha*, 103 Wis. 6, an order on the city by a paving contractor to material men for material furnished by them was held unenforceable, because it did not amount to an assignment of the whole of the contractor's claim against the city, and the Wisconsin Supreme Court holds that "an



CONTINUATION OF VIEW ON OPPOSITE PAGE.
All photographs were taken July 29, 1919.

assignment by a creditor of a portion of his claim is not binding on the debtor, unless he assents to such severance of his liability."

The municipality may waive its right to contest the validity of an assignment by recognizing the assignment, by dealing with the assignee or otherwise, or accepting the benefit of work done under the assignment. In *City of Dunkirk v. Wallace*, 19 Ind. App. 298, it was held that in an action by an assignee of a contract for breach thereof, it was immaterial that there was no averment that contract was by its terms assignable, or could be sublet, the city having had knowledge that the assignee was making the improvement under the contract, made no objection thereto, and acquiesced therein.

A building contract with a city provided that the contractor should not subcontract any part of the work without the architect's consent. When the contract was made, the contractor informed the board that a subcontractor, then present, would do the carpenter work, and neither the board nor the architect made any objection. No objection was made to the subcontract until the subcontractor sued to enforce a lien for work done. It was held, *Ocorr v. City of Little Falls*, 79 N. Y. Supp. 251, 77 App. Div. 592, affirmed 178 N. Y. 662, that the consent of the architect was in effect given as required; but, if it was not, the city, having with full knowledge of the facts, accepted the benefit of the work done and materials furnished, was not in a position to urge the invalidity of the subcontract.

Contracts for the construction of sewers were sublet with the written consent of the city, and the subcontractors fully performed the work thereunder. Thereafter the original contractor assigned the contracts to the subcontractors, without the city's knowledge or assent. It was held that the assignment was valid and entitled the subcontractors to maintain an action for extra work done under the contracts, though the city did not know of or consent to the assignment. *Hanrahan v. City of Janesville*, 145 Wis. 457, 120 N. W. 482.

A city, to take advantage of a clause in a contract against assignment without consent in an action on the contract, must plead it as a defense in its answer. *Episcopo v. New York*, 72 N. Y. Supp. 140.

A clause prohibiting assignment without consent of the city, though it would be available as a defense to the city to any claim made against it by an assignee of the contract, is not available against a claim, not made against the city, but against the reserve fund payable under the contract. If that fund did not belong to the city, as was held, it was a matter of no concern to it what parties were held to be entitled to receive it. *Episcopo v. New York*, 72 N. Y. Supp. 140. The sole purpose of a clause in a contract prohibiting assignment without consent of the city is for the city's protection, and to secure for it the skill and experience of the person contracted with, and not the protection of outside parties; therefore, it is not available as a defense to parties claiming liens. *Episcopo v. New York*, 72 N. Y. Supp. 140. *Fortunato v. Patten*, 147 N. Y. 277, 41 N. E. 572.

When a contract to do work for a city is assigned as a whole after a part performance, the assignment includes all sums due for work previously done under the contract which have been retained by the city to ensure performance. *Chapin v. Pike*, 184 Mass. 184, 68 N. E. 42.

As a general rule, an assignment made in direct contravention of a statute would be void and unenforceable; but the statute may show that the legislature had in view only a limited purpose, as the following decisions indicate.

Chapter 444 of the New York Laws of 1897 provides,

in substance, that if any contractor to whom a municipal contract is let shall, without the previous written consent of the department or official awarding the same, assign, transfer, convey, sublet or otherwise dispose of the contract; or his right, title, or interest therein, or his power to execute such contract, to any other person, the municipal corporation shall be relieved and discharged from any and all liability and obligation growing out of said contract to said contractor, and to the person, company, or corporation to whom he shall assign, transfer, convey, sublet or otherwise dispose of the same. It was held that the statute would not prevent a contractor from subletting a portion of the work involved in the contract. Any other construction would require a contractor, in order to perform a contract entered into with a municipality involving a variety of work, to do substantially all of it by day's labor. The prohibition is against assigning, subletting, etc., the whole or the substantial part of a contract entered into with a municipality, so as to put it out of the power of the original contractor to perform it. The New York Appellate Division said *Ocorr v. Little Falls*, supra, that it is evident that the act was passed for the purpose of preventing a sort of brokerage in city contracts,—to prevent a party from obtaining a contract from a municipality, and then assigning it and the whole of it to some one else, and thus relieve himself of all responsibility in respect thereto.

A contractor, by giving an order on a fund to accrue from the performance of a public contract, neither assigns, sublets, or disposes of the contract nor his power to execute it, and does not contravene thereby the provisions of chapter 444 of the New York Laws of 1897, referred to above. On the contrary, the negotiation of the order may secure to the contractor the very means to carry out his contract. *Brace v. Gloversville*, 167 N. Y. 452, 60 N. E. 779.

A entered into a contract with the city of St. Paul for the construction of certain public works. After a part of the work had been done he became bankrupt and abandoned it. He had assigned to B the money due from the city on the contract. In an action against the city it was held, *Dickson v. St. Paul*, 97 Minn. 258, 106 N. W. 1053, that the assignment was legal, and not in violation of section 12 of chapter 15 of the city charter which provides that no contract with the city for the doing of any public work shall be assigned or transferred in any manner. The court said that if the charter provision were construed so as to deprive the contractor of his right to assign his claims against the city, it would be a very serious question whether it would not be void as an attempt to improperly restrain the rights of individuals in respect to private contracts. On the contrary, the evident purpose of the provision is to prohibit an assignment or transfer of a contract which will work a novation of parties and thus substitute another party for the one with whom the city entered into contractual relations and in whose capacity and ability it has confidence.

It is no objection to the assignment of the contract, as between the parties to it, that the assignee is a trustee of the town; though he would not be permitted to make a profit out of it. *Town of Tipton v. Jones*, 77 Ind. 307.

An express provision in a contract with a municipality that it shall not be assigned is enforceable. A paving contract provided that the contractor should not "assign or transfer this contract or sublet any of the work embraced in it." The court said, holding that an assignee thereof could not recover the money due thereunder, or any part thereof: "But it is needless for us to speculate on the motives for the city's action. It is enough for us to know—whatever its reasons may have been—that it has, in plain language, stipulated against an assignment

of the contract. That stipulation is valid and must be enforced." *Murphy v. City of Plattsmouth*, 78 Neb. 163, 110 N. W. 749.

In the absence of any law designating the officer to whom notice of the assignment should be given, notice of it should no doubt be given to the officials through whom the contract was made, though there is no decision expressly on the point, *Philadelphia v. Lockhardt*, 73 Pa. St. 211.

STREET LIGHTING IN BALTIMORE

Most Lamp Fixtures Are Owned and All Are Operated by Private Corporations—Prices Paid—Lighting Alleys—Street Signs.

The Department of Lamps and Lighting of Baltimore, Md., has under its supervision 20,419 lamps, maintained by contract, of which 567 were installed during 1918. It also has charge of street signs, and the inspection of gas and electric meters used by city departments and in public places. Also it tests coal oil sold by retail dealers in quantities of less than a barrel.

Its duties in connection with the street lamps include locating, supervising and erecting all new lamps; exacting the terms of the contracts with lighting contractors; planning the installation of additional lamps of all kinds in advance of new paving in both old and new streets; and transferring existing lamps from old to new locations for the purpose of improving the service. Street signs are erected and kept in repair by it.

Much of the extension work planned for 1918 was prevented by war conditions, but the superintendent of the department, William Mohr, hopes to make considerable progress this year toward catching up. Among other restrictions on service last year, about a thousand lamps were cut out of service under direction of the fuel administrator, the service being restored to normal conditions on November 23rd. This saved the city approximately \$12,500.

All the ornamental luminous arc lamps and fixtures comprising the "White Way" districts, the ornamental lamps and fixtures in service on the several boulevards in North Baltimore, City Hall Plaza, Polytechnic Institute, Eastern and Western High Schools, sewage pumping station, and the various bridges, together with the gas lamp-posts and lanterns (except a number of boulevard lanterns and patent lamp burners), are the property of the city. All other lamp fixtures are the property of the several contractors.

OPERATION OF LAMPS.

All the street lamps are operated and maintained under contract with private corporations, with the exception of certain incandescent electric lamps which are owned by the city and are operated and maintained by the department direct, the current being supplied by the Consolidated Gas, Electric Light & Power Company, and paid for by meter measurement. Also the lamps around the sewage pumping station and those on the City Hall Plaza are operated and maintained by the department, the current being supplied from the high-pressure pumping station.

The prices paid are as follows: Incandescent mantle gas lamps, \$17; incandescent naphtha, \$29; incandescent electric, 200 c. p., overhead service, novalux fixtures, \$41.30; 40 c. p., underground, \$32.20; 40 c. p., overhead \$20.70; "White Way" luminous arc, all-night underground, \$87.60; the same, half-night, \$84; 6.6 amp. arc, old type, all-night, underground, \$78; same, half-night, \$74; same, all-night, overhead, \$66; 4 amp. arc lamps, all-

night, overhead, \$62; same, half-night, underground, \$70; same, all-night, underground, \$74. Incandescent electric, ornamental, 60 c. p. lamps, owned and maintained by the department, cost \$15.22; and ornamental clusters of 60 and 80 c. p. incandescent electric, owned and maintained by the department, cost \$8.74, not including the current. Current used in public buildings cost 5 cts. per kw. h. for the first 40,000 per month, and 3.66 cts. for all over this; and 3 cts. for a consumption of 15,000 kw. h. in any one month at one location.

During the year, 1,119 "White Way" ornamental posts, located in the business districts, were thoroughly overhauled, repaired and painted, thus adding to the attractiveness of the street lamp equipment.

COST OF GAS.

The gas and naphtha lamps are operated by the American Street Lighting Company, the gas being supplied by the Consolidated Gas, Electric Light and Power Company.

The city pays for all gas for street and outdoor lamps located along the company's mains, \$6.50 per lamp per year, not exceeding two and one-quarter cubic feet of gas per hour, per lamp, payable at 54 1/6 cts. per month per lamp; and for all gas consumed in excess of an average of two and one-quarter cubic feet per hour, per lamp, 50 cts. per thousand cubic feet for such excess. Should the average consumption of gas exceed three cubic feet per hour, per lamp, such excess is charged to the American Street Lighting Company.

The cost for gas supplied to the city along the company's mains, for lighting the public buildings of the city, is a primary rate of 70 cts. per thousand cubic feet of gas, and a secondary rate of 50 cts. per thousand cubic feet of gas. The primary rating is set for a specified number of cubic feet of gas used monthly at each separate premise, excess of this to be charged for at the secondary rate.

The cost for service connections from main to outdoor lamp is \$11 each for material and labor, the city also paying for replacing improved pavements. From main to curb only, the price is \$8; and from curb to lamp only, \$5.

LAMPS IN ALLEYS.

Where found necessary, the matter of lighting very dark alleys has been taken up by the department during the year and, upon urgent demands by the citizens, 59 lamps were installed in these alleys. Under an arrangement with the Electric Commission and the Consolidated Gas, Electric Light and Power Company, all the lamps installed in the several alleys in a block are fed overhead from a primary pole which has been connected up with the underground service from the main thoroughfare. This system has reduced the cost to the Electrical Commission for labor and material, as it has been the means of eliminating the necessity of laying conduits up these alleys, as well as effecting a saving in the expense to this department for the maintenance and operation of these lamps.

The several playgrounds and athletic fields have been lighted during the year for the convenience of those who use these grounds and fields for recreation.

STREET SIGNS.

Due to the opening of new streets, changing the street names in the old sections of the city, and the discarding of old and worn-out street signs, the department was required to furnish and erect 34 signs of blue enamel on iron with white letters; 682 ruby glass with white letters; and 868 "White Way" luminous lamp globes, lettered. The department painted and made a number of repairs to hospital zone signs.

WATER RATES AND FIRE PROTECTION CHARGES

Data from Several Hundred Cities of the United States—Maximum and Minimum Rates—Changes Since Before the War—Receipts for Public Hydrants and Private Fire Protection.

HYDRANT RENTAL (CONTINUED)

The other cities pay a fixed amount per hydrant per year. Of the 277 municipal plants, 146 receive nothing for hydrant rental or public fire protection, while only six of the private plants give this service free.

Of the 131 municipal plants which receive a stated sum per hydrant, fifteen receive \$10 or less, sixteen receive more than \$10 but not more than \$20, thirty-six receive more than \$20 but not more than \$30, thirty-seven receive more than \$30 but not more than \$40, seventeen receive more than \$40 but not more than \$50, five receive more than \$50 but not more than \$60, and five receive more than \$60.

Of the private plants, sixty-three receive stated sums per hydrant per year, of which five receive \$10 or less, four receive more than \$10 but not more than \$20, four-

teen receive more than \$20 but not more than \$30, nineteen receive more than \$30 but not more than \$40, thirteen receive more than \$40 but not more than \$50, four receive more than \$50 but not more than \$60, and four receive more than \$60.

One municipal plant receives as little as \$3.50 and one \$4 per hydrant per year, and four receive \$5. The highest rate reported by a municipal plant was \$73.33. One private plant receives \$3 and two receive \$6, which are the only sums less than \$10 reported. The highest rates reported by private plants were \$100 and \$95 respectively.

The average rate received by municipal plants, not including those which receive nothing at all, was \$32.36; or, if we include, in averaging, those plants which receive nothing, the average becomes \$15.54. The average for the private plants, omitting those which furnish

METER RATES AND FIRE PROTECTION (Continued).

City and State.	Municipal or Private.	Rate.	Maximum Meter Rates. For consumption less than	Minimum Meter Rates.
Ohio:				
Akron	Municipal	.....	.....	.....
Ashland	Municipal	.....	.....	.....
Athens	Municipal	20c. per M	25,001	9c. per M
Barnesville	Municipal	\$1.60 quarterly	.....	.....
Bellefontaine	Municipal	15c. per M	25,001 per month	10c. per M
Bryan	Municipal	30c. per M	10,001 per quarter	8c. per M per quarter
Chillicothe	Private	20c. per M	50,001 per quarter	15c. per M
Cincinnati	Municipal	10c. per 100 cu. ft.	Straight	.....
Cleveland	Municipal	4c. per 100 cu. ft.	.....	.....
Conneaut	Private	25c.	1,001 daily	.....
Coshocton	Municipal	25 per 100 cu. ft.	1,001 cu. ft.	6c. per 100 cu. ft.
Dayton	Municipal	9c. per 100 cu. ft.	10,001 cu. ft. per quarter	4½c. per 100 cu. ft.
Delaware	Private	20c. per 100 cu. ft.	4,001 cu. ft.	8c. per 100 cu. ft.
Dover	Municipal	20c.	301 per day	6c.
East Cleveland	Municipal	8c. per 100 cu. ft.	Straight	.....
East Liverpool	Municipal	77c. per M	.....	.....
East Youngstown	Municipal	30c.	6,001 per quarter	15c.
Eaton	Municipal	23c.	1,001 per day	12½c.
Findlay	Municipal	18c. per 100 cu. ft.	201 cu. ft.	6c. per 100 cu. ft.
Fostoria	Municipal	15c. per 100 cu. ft.	3,500 cu. ft. per month	5.25c. per 100 cu. ft.
Girard	Private	35c.	15,001	10c.
Lakewood	Municipal	9c. per 100 cu. ft.	Straight	8.1c.
Marietta	Municipal	30c. per M	.....	9c. per M
Martins Ferry	Municipal	4c. per M	100,001	2½c. per M
Napoleon	Municipal	24c. per 100 cu. ft.	.....	Sliding scale.
Newark	Municipal	18c. per 100 cu. ft.	10,000 cu. ft. per quarter	8c. per 100 cu. ft.
Piqua	Municipal	.....	.....	.....
Ravenna	Municipal	18c. per 100 cu. ft.	15,001 cu. ft.	7c. per 100 cu. ft.
Sidney	Municipal	22.2c. per 100 cu. ft.	4,001 cu. ft. per quarter	8c. per 100 cu. ft.
Steubenville	Municipal	19c.	.....	10c.
Tiffin	Private	21c. per 100 cu. ft.	1,001 cu. ft. per quarter	10½c. per 100 cu. ft.
Troy	Municipal	20c. per M	10,001	12c. per M
Urbana	Municipal	25c. per M	45,001	10c. per M
Van Wert	Municipal	35c. per M	45,001	30c. per M
Wadsworth .....	.....	25c. per M	Straight	.....
Wilmington	Private	25c. per M	.....	.....
Xenia	Private	32.4c. per M	8,501 per day	15.9c. per M
Oklahoma:				
Durant	Municipal	50c. per M	2,001	.....
Oklahoma City	Municipal	25c.	10,001	10c.
Oregon:				
Baker City	Municipal	10c. per M per month	.....	.....
Corvallis	Municipal	15c. per M	50,001	8c. per M
Hood River	Municipal	33c. per M	5,001	11c. per M
Klamath Falls	Private	.....	2,250	7c. per 100 cu. ft.
Mansfield & North Bend.	Private	.....	.....	.....
Portland	Municipal	8c. per 100 cu. ft.	20,001 cu. ft.	6c. per 100 cu. ft.
Pennsylvania:				
Barnesboro	Municipal	30c. per M	100,000 per month	.....
Beaver Falls	Private	66.3c. per M	4,001 per quarter	6c. per M
Bellefonte .....	.....	5c. per M (in boro limits)	1,000,001	3c. per M
Bradford	Municipal	.....	.....	.....
Carbondale	Private	30c. per M	Domestic	8c. per M
Catasauqua	Municipal	25c. per 100 cu. ft.	2,101	4c. per 100 cu. ft.
Chambersburg	Municipal	10c. per 100 cu. ft.	.....	3c. per 100 cu. ft.
Chester	Private	34½c. per M	15,001	11½c. per M
Clearfield	Private	20c. per M	25,001 per quarter	4c. per M
Coraopolis	Municipal	30c. per M	25,001	7c. per M
East Stroudsburg	Municipal	9c. per 100 cu. ft.	500,001 cu. ft.	3c. per 100 cu. ft.
Freeland	Private	.....	.....	.....
Harrisburg	Municipal	4.3c. per 100 cu. ft.	Straight	.....
Indiana	Private	\$1 per M	3,001	15c.
Jersey Shore	Private	25c. per M	100,000 per quarter	5c. per M
Johnstown	Private	.....	.....	.....
Juniata	Municipal	6c. per M	Straight	.....
Lancaster	Municipal	5c. per M	50,000	.....
Lewistown, 4 other municipalities & adjacent territory	Private	33½c. per 100 cu. ft.	301 cu. ft.	.....

METER RATES AND FIRE PROTECTION (Continued)

City and State.	Minimum Meter Rates For consumption more than	Increase since before the war.	City pays for fire hydrants.	Charge for private hydrants or sprinklers.
Ohio:				
Akron .....	.....	From 10c to 12c per 100 cu. ft.	Nothing	2-in., \$8; 3-in., \$12; 4-in., \$16; 6-in., \$24
Ashland .....	.....	Will raise rates first of next year \$2 per 2,000 cu. ft.	Nothing	None
Athens	1,000,000	None	Nothing	Have none
Barnesville .....	.....	About 10%; will raise again about 1920	Nothing	None
Bellefontaine	250,000 per month	10c to 15c per M. gal.	Nothing	Charge for sprinklers, but not hydrants
Bryan	50,001 per quarter	Maximum from 25c to 30c; minimum from 6c to 8c	Nothing	None
Chillicothe	100,000 per quarter	None	\$50 each per year	7½c per sprinkler head
Cincinnati .....	.....	25% increase, Jan. 1, 1918	Nothing	None
Cleveland .....	.....	None	Nothing	1½-in., \$8; 2-in., \$10; 3-in., \$15; 4-in., \$18; 6-in., \$50
Conneaut .....	.....	Proposed	\$35 per year	According to size of plant
Coshocton	1,000 cu. ft.	None	Nothing	None
Dayton	500,000 cu. ft. per quar.	Slight increase to some and decrease to others	All credit	\$5 for fire hydrants. Fire line service, 2-in., \$5, to 8-in., \$37.50
Delaware	4,000 cu. ft.	None	\$40 each	None
Dover	10,000	None	Nothing	None
East Cleveland .....	.....	1c per 100 cu. ft.	.....	.....
East Liverpool .....	.....	About 75%	Nothing	\$20 per year for each opening
East Youngstown	300,000	None	Nothing	Have none
Eaton	3,000 per day	\$1 per year	Nothing	None
Findlay	3,200 cu. ft.	None	\$40 each credit	Sprinklers metered
Fostoria	67,000 cu. ft. per month	.....	Nothing	By meter
Girard	2,000,000	None	\$45 for first 50, \$40 for next and \$35 for	6-in., \$50 per year, to 3-in., \$15
Lakewood	If paid within 30 days	None	Nothing	None
Marietta	20,000 per day	10%	Nothing	.....
Martins Ferry	100,000	None	.....	None
Napoleon .....	.....	10%	Nothing	None
Newark	100,000 cu. ft. per quar.	Maximum, 15c to 18, and so on	\$20 each credit	None
Piqua .....	.....	None	Credit valuation	None
Ravenna	300,000 cu. ft.	33½%, May 1	None	None
Sidney	70,000 cu. ft.	None	None	None
Steubenville	100,000	20%	Bought by dept. public safety	According to size of building
Tiffin	22,000 cu. ft. per quar.	20%	\$40 each	Sprinklers, \$10 per 1,000 sq. ft. to 10,000 sq. ft. floor space; \$5 per 1,000 over that
Troy	10,000	None	Nothing	None
Urbana	45,000	None	Nothing	None
Van Wert	45,000	None	.....	None
Wadsworth .....	.....	50%; decrease proposed	Village retires bonds for street lighting bonds and rental	Have none
Wilmington	98,000	None	\$3.75 each per month	\$15 per year
Xenia .....	.....	First fixture increased from \$5.75 to \$10.20; not much change in others	\$68 per plug; old rate, \$32	3-in., \$44; 4-in., \$56; 6-in., \$140; and 8-in., \$2.80
Oklahoma:				
Durant .....	.....	20%	None	None
Oklahoma City	1,000,000	5c per M.	None	None
Oregon:				
Baker City .....	.....	None	185 hydrants; \$2 each per month	Have none
Corvallis	2,000,000	None	Nothing	Meters required
Hood River	20,000	None	Nothing	None
Klamath Falls	5,000 cu. ft.	None	\$22 each per year	¾-in. hydrant, 50c. to 2-in., \$2 per month
Portland	20,000	None	General fund pays interest on bonds amounting to \$50,000	Metered
Pennsylvania:				
Barnesboro .....	.....	From 24c to 30c per mo.	Nothing	None
Beaver Falls	2,250,000 per quar.	None	\$400 per mile and \$7 each per year	2-in. tap, \$75 per year, to 8-in., \$300
Bellefonte	1,000,000	None	Nothing	None
Bradford .....	.....	None	Nothing	None
Carbondale	1,000,000	Minimum rate from 6c to 8c	.....	1-in., \$10, to 10-in., \$300, and meter rates
Catasauqua	140,000	Slight increase proposed	\$600 per year for 70 hydrants	\$15 and flat rate for sprinklers
Chambersburg	600,000 cu. ft.	25c in minimum charge; no discount	\$15 each	None
Chester	750,000	15%	\$40 each per 1,000 ft. of pipe; all others free	4-in., \$5.75, to 10-in., \$13.80
Clearfield	600,000 per quar.	Reduced	\$10 each per year	6-in., \$150; 4-in., \$75 per year for automatic sprinklers
Cornopolis	2,000,000	None	\$35 each per year	None
East Stroudsburg	4,000,000 cu. ft.	None	.....	\$5 per year
Fredland .....	.....	.....	.....	\$20 per year
Harrisburg .....	.....	.....	No charge, but allow \$50 worth of water each year	None
Indiana .....	.....	None	\$25 per hydrant	\$25 per year
Jersey Shore	5,000,000 per quar.	None	\$20 each for 85 hydrants per year; each addi- tional, \$9	.....
Junata .....	.....	None	Nothing	.....
Lancaster .....	.....	Proposed	\$35 each	\$10 per year
Lewistown, 4 other mu- nicipalities & adjacent territory .....	.....	None	\$6 to \$15 each per year	\$15 each per year

hydrant service free, was \$36.56; or, including the free hydrants, the average was \$33.78. It appears, therefore, basing the calculation only upon the payments made and omitting those cases in which hydrants were furnished free, that the average rate received by private companies is about \$4 greater than that received by municipal departments.

HORSES VS. MOTOR TRUCKS IN REFUSE COLLECTION.

Comparison of Cost of Maintaining and Operating Each, from Experiences of Various Cities in Their Use for This Service.

In the study of the problem of refuse collection* in Rochester, made by the Bureau of Municipal Research, the investigators obtained data concerning the cost of maintaining and operating both horses and motor trucks in such service in other cities, although they found comparatively few definite and reliable figures available. They reported the following:

COST OF MAINTAINING HORSES.

According to the report of superintendent E. W. Stribling, of the Division of Garbage and Refuse Collection, the cost of maintaining 142 horses by the city of Columbus, Ohio, in 1916 was 83.7 cents per horse per day. This included a cost of 41.63 cents for feed; 13.53 cents for veterinary services, shoeing and supplies; and 28.54 cents for stable labor. In 1915 the unit cost was 83 cents per horse per day, including 45.77 cents for feed, 11.98 cents for veterinary services, shoeing, supplies and 25.15 cents for stable labor. The labor force consisted of 16 men and a night watchman. The cost of feed was about \$14 per ton for hay, 75 cents per bushel for corn and 50 cents per bushel for oats. Straw cost about \$7 per ton. In 1916 each horse consumed daily 30 pounds of hay, and 13 pounds of grain; 5.3 pounds of straw were used in bedding each horse. In 1915 these quantities were 31 pounds, 12.75 pounds and 6.3 pounds respectively.

Similar costs for 1916 in the city of Cincinnati, given in the report of Fred Maag, superintendent of the Department of Street Cleaning, Sewer and Catch Basin Cleaning, indicate that 34.9 cents per horse per day was the cost of feeding and 39.4 cents was the cost of "other stable expenses," the total cost being 74.3 cents per horse per day. Approximately 190 horses and 80 mules were maintained in 17 stables, practically one-half of this number being boarded in one stable. Each horse consumed 14.7 pounds of hay, 11.5 pounds of oats and 2.8 pounds of nutritia daily. Hay cost about \$18 per ton, oats 45 cents per bushel and nutritia, \$1.50 per hundredweight. (No allowance apparently was made for bedding straw.)

In Washington, D. C., according to the report of the Engineering Department for the fiscal year, 1915-16, the cost of feed amounted to 40.2 cents per horse per day.

The daily allowance per horse was 3.3 pounds of dry straw, 7 pounds of long timothy, 7 pounds of mixed clover hay, 12.8 pounds of oats and 1.7 pounds of bran. Straw cost at the rate of \$16.00, long timothy at \$20.80 and mixed clover hay at \$20 per ton, oats at 54 cents per bushel and bran at \$1.27 per hundredweight. The cost of shoeing was stated to be 2.6 cents per horse per day.

In the annual report of the Department of Street Cleaning of New York, in 1916, Commissioner J. T. Fetherston states that the cost of "labor, materials, supplies and consumable equipment used directly in the care of horses" amounted to \$1.087 per horse per day and that this cost represents prices of forage and supplies considerably above normal. About 64 per cent of the total cost represents the cost of forage, 30 per cent the direct labor cost and 6 per cent the cost of maintaining stable equipment. In the 26 stables maintained by the department 2,400 horses were cared for. One hostler and one stableman were employed for each 13 horses. In 1917, the daily allotment for each horse was 23 pounds of oats, 18 pounds of hay, 3 1-7 pounds of bran and 3 pounds of straw. In addition to this each horse was given 1 1-2 pounds of coarse salt and 2 1-2 pounds of rock salt per month. When idle the horses were given half ration of oats. In 1916, the daily ration was 21 pounds of oats, 15 pounds of hay and 1 1-7 pounds of bran. The other items were practically the same as for 1917. This appears to be an unusually heavy ration and the cost of feed alone was practically 70 cents per horse per day.

The foregoing figures are about the only ones available for stable costs outside of Rochester. For Rochester it was possible to obtain from James M. Harrison, formerly superintendent for the Genesee Reduction Company, data of the cost of maintaining horses employed in garbage collection from 1908 to 1916. On January 1, 1917, the Department of Public Works took over the operation of the garbage plant stables and the 1917 costs, therefore, are available also.

In 1917 the 68 horses quartered at the garbage plant stables cost about 68 cents per horse per day to maintain. The approximate cost of feed amounted to 50.7 cents; the direct labor cost of stable operation, 9.4 cents; and the estimated cost of barn supplies, shoeing and harness repair, 7.9 cents per horse per day. No exact ration allotment was made, but according to the total quantities purchased during the year each horse consumed about 11 pounds of oats and 22 pounds of hay per day. The approximate average cost of oats was 80 cents per bushel and the cost of hay was about \$18 per ton. The stable force consisted of one barnman and three helpers, the barnman and one helper working seven days and the other two helpers six days per week. The drivers cleaned and harnessed the horses and gave them their noon feeding.

The foregoing data and certain additional data as to the cost of maintaining horses by the Genesee Reduction

COMPARISON OF RATIONS AND COST OF FEEDING HORSES IN FIVE CITIES.

Location.	Year.	Number of Horses.	Daily Ration per Horse.	Grain lbs.	Hay lbs.	Straw lbs.	Feed	Stable Labor	Miscellaneous	Total	Remarks.
Columbus, Ohio.	1915	142	12.75	31.0	6.3		\$0.4577	\$0.1198(a)		\$0.5775	Hay at \$14 ton; corn at 75c. bu.; oats at 50c. bu.; straw at \$7 ton.
	1916	142	13.00	30.0	5.3		0.4163	0.2854	0.1353(a)	0.837	
Cincinnati	1916	270(b)	11.5	14.7	...		0.3490	.....	0.3940(d)	0.743	Hay at \$18 ton; oats at 45c. bu.; nutritia at \$1.50 cwt.
New York	1916	2400	2.8(c)	15.0	3.0		0.696(g)	0.326(g)	0.065(g)	1.087	One hostler and one stableman for every 13 horses. No data as to purchase prices of food. Hay at \$20.80 and \$20 ton; straw at \$16 ton; oats at 54 c. bu.; bran at \$1.27 cwt.
			21.0(e)								
			1 1/7(f)								
Washington	1915	(h)	23.0(e)	18.0	3.0		(h)	(h)	(h)	(h)	
			3 1/7(f)								
Rochester	1917	68	12.8	14.0	3.3		4.402	(h)	0.026(j)	(h)	Oats at 80c. bu.; hay at \$18 ton.
			1.7(i)								
			11.0	22.0	...		0.507	0.094	0.079(k)	0.680	

(a) Includes shoeing, supplies and veterinary services; (b) 190 horses and 80 mules; (c) nutritia; (d) includes stable labor and "other stable expenses"; (e) idle horses given half rations of oats; (f) bran, also each horse given 1 1/2 lbs. coarse salt and 2 1/2 lbs. rock salt per month; (g) approximate; (h) data incomplete or not available; (i) bran; (j) shoeing only; (k) includes supplies, shoeing, harness repairs.

Company before 1917, are shown in the accompanying tables:

Cost of Feeding Horses Employed in the Collection of Garbage in Rochester, N. Y., 1908 to 1916.

(By Courtesy of James M. Harrison, Formerly Superintendent for Genesee Reduction Company.)

Year	Total Cost of Feed (Grain, Hay, Straw)	Approximate No. Horses Fed	Average Cost per Horse per Day
1908.....	\$7364.08	40	\$0.505
1909.....	6964.89	40	.477
1910.....	6912.67	40	.474
1911.....	6827.04	40	.467
1912.....	7816.29	65	.330
1913.....	9269.83	65	.395
1914.....	8771.77	65	.370
1915.....	10666.02	66	.443
1916.....	9570.47	66	.397

Cost of Renewals of Horses Employed in the Collection of Garbage in Rochester, N. Y., 1912 to 1917.

Year	Total expenditures for horses	Approximate No. of horses	Average cost per horse per year
1912.....	\$2219	65	\$34
1913.....	1885	65	29
1914.....	4205	65	65
1915.....	1020	66	15
1916.....	1575	66	24
1917.....	1125	68	17

Estimates as to the economic life of a horse used in collection work vary from 4½ to 8 years. It is believed, however, that a horse should give at least six years of useful service in this kind of work. Assuming a first cost of \$275 and a salable value of \$75 at the end of six years, the annual depreciation would be \$33.33 per year per horse.

From the foregoing and other data it appears that a horse used in collection work should be fed on the average about 20 pounds of hay and 14 pounds of oats per day, in addition to possibly 2 pounds of other feed consisting principally of bran, salt, etc. Also each horse should be bedded with approximately 5 pounds of dry straw daily. On this basis and with hay costing \$18 per ton, oats 80 cents per bushel, other feed \$1.50 per hundredweight and straw \$12 per ton, the total daily cost per horse of feed and bedding would amount to the following:

20 lbs. of hay at \$18.00 per ton.....	\$0.18
14 lbs of oats at \$.80 per bu.....	.35
2 lbs. of other feed at \$1.50 per cwt.....	.03
5 lbs. of straw at \$12.00 per ton.....	.03

Total estimated cost of feed and bedding per horse per day..... \$0.59

In addition to this, the cost of veterinary services, maintenance of stable equipment and supplies, shoeing, and harness repairs should not exceed 12 cents per horse per day. If one hostler at \$800 per year and one stableman at \$750 per year were provided for every 20 horses, the direct labor cost of stable operation would amount to about 21 cents per horse per day. This would include the cost of all work involved in feeding, bedding, cleaning and otherwise caring for horses, and all labor about the stables such as cleaning stables, handling feed and supplies, handling and moving equipment, cleaning equipment, etc.

The total cost per horse per day, therefore, might be estimated at 92 cents, distributed as follows:

Feed and bedding.....	\$0.59
Veterinarian, shoeing, harness repairs, etc....	.12
Direct labor cost of stable operation.....	.21

Total maintenance cost per horse per day.... \$0.92

The annual cost of maintaining horses at this figure would be \$336.65 per horse, exclusive of the cost of overhead supervision; fixed charges on first cost of horses,

stable sites and stable buildings, depreciation of horses, and depreciation and maintenance of stable buildings.

The annual (purchase) cost of the horses used in garbage collection in Rochester since 1912 has been about \$31 per horse, which includes replacements as well as the purchase of three horses during the six years in addition to the number owned at the beginning of the period.

COSTS OF MOTOR TRUCK OPERATION.

In 1914 a 5-ton truck equipped with a specially designed 10-yard collection body was given a trial in house-to-house collection of garbage and ashes on a three-mile haul in the borough of the Bronx, New York City. It was given a further trial in hauling garbage from relay stations in the outlying sections of the borough. On the three-mile haul in making house-to-house collections the truck did not prove as economical as the one-horse carts generally used. But in hauling from relay stations on the longer haul the truck showed a considerable saving over horse-drawn carts. The haul for this work was approximately seven miles. The truck made four round trips for a total of 54.2 miles and hauled 27.6 tons of garbage as against about one and one-half trips made in the same length of time by a one-horse cart hauling approximately 1 1-2 tons (0.9 ton per load). On the shorter haul the cart made three round trips per day for a total distance of 18 miles including house-to-house collections and hauled 5.4 tons; the truck made five round trips for a total distance of 32.7 miles and hauled 23.85 tons.

The poorer showing of the truck on house-to-house collections was attributed to the time spent in loading. Although four helpers were provided, the time so spent represented more than one-half the total time. The time spent in traveling to and from the dump was only one-fifth the total time. On relay work, however, the loading time was only 35 per cent of the total time.

The one-horse cart outfit cost \$4.32 per day. The total daily cost of operating the truck was \$13.70, distributed as follows:

Item	Total cost	Per cent of total
Gasoline	\$2.41	17.6
Oil .....	.75	5.4
Truck Depreciation (Cost \$5,000, life 5 years).....	2.78	20.3
Interest on investment at 6%....	.83	6.1
Repairs, labor, materials, tires, grease and miscellaneous.....	4.07	29.7
Garaging .....	.30	2.2
Driver's pay	2.56	18.7
Total	\$13.70	100.0

The New York Department of Street Cleaning has used large tractor-trailer motor propelled collection units to some extent. These are giant outfits hauling 25 cubic yards of refuse per load. Collections of ashes, rubbish and garbage are made simultaneously, but in separate compartments. The average haul is about 1½ miles. Special equipment is provided for unloading the refuse onto scows. The principal factor tending to produce economy from the collection standpoint is the fact that all refuse is dumped at a common point of disposal. For this reason all refuse may be collected at one time by providing separate refuse compartments on the collection vehicles.

In Philadelphia a part of the collection equipment has been motorized. Five-ton trucks equipped with 12-yard bodies have proven economical in the collection of ashes and rubbish from sections where the haul to the dump averages six miles.

(To be concluded)

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NEWS OF THE SOCIETIES

Aug. 26-28.—LEAGUE OF CITIES OF THE THIRD CLASS IN PENNSYLVANIA. Twentieth annual convention, Allentown, Pa. Secretary, Fred H. Gates, city clerk, Wilkes-Barre, Pa.

Aug. 27-29.—VIRGINIA STATE FIREMEN'S ASSOCIATION. Thirty-third annual meeting, Charlottesville, Va. Secretary, E. K. Landis.

Sept. 30-Oct. 1-3.—NEW ENGLAND WATERWORKS ASSOCIATION. Annual meeting, Albany, N. Y. Secretary, Tremont Temple, Boston, Mass.

Oct. 27-30.—AMERICAN PUBLIC HEALTH ASSOCIATION. Annual meeting, New Orleans, La. Secretary, A. W. Hedrich, 169 Massachusetts ave., Boston, Mass.

Nov. 12-14.—AMERICAN SOCIETY FOR MUNICIPAL IMPROVEMENTS. Annual convention, New Orleans, La. Secretary, Charles C. Brown, Springfield, Ill.

American Association of Engineers.

That the American Association of Engineers is making progress in establishing more favorable schedules of salaries for engineers in municipal work is indicated by the success of the St. Louis Chapter of the association in obtaining the support of the Board of Aldermen of St. Louis to that chapter's campaign for higher compensation for engineers employed by the city. A bill introduced before the Board of Aldermen on May 16, 1919, had been approved by the Efficiency Board and indorsed by the Associated Engineering Societies of St. Louis, but had been held in the hands of the Board of Estimate and Apportionment without further action. In order to have the bill called for action the St. Louis Chapter drafted and had introduced a resolution before the Board of Aldermen requesting the Board of Estimate and Apportionment to call up the bill for consideration. As this resolution was adopted unanimously by the Board of Aldermen, and as mayor H. W. Kiel has announced himself as favoring the bill, it is expected that it will be passed very soon. The bill provides for an increase of about 15 per cent in the salaries of engineers, draftsmen and related technical men.

The organization committee appointed by the Executive Board of the American Association of Engineers to study the pay of engineers in public service and to recommend schedules of salaries held a meeting in Chicago on August 2. The committee recommended to the National Executive Committee that a sub-committee be appointed to study and report at once on salaries for highway engineers, and that other sub-committees be appointed from time to time to take up similar studies in other branches of public service, and that the second sub-committee to be appointed be instructed to study and report a schedule of salaries for municipal and county engineers. The report of the Organization Committee was approved by the Executive Committee and the sub-committee will be

appointed and the names of its members announced soon. The Organization Committee consists of A. N. Johnson, chairman; S. C. Hadden, A. R. Hirst and F. H. Newell.

Dr. F. H. Newell, president of the American Association of Engineers, left on August 10 for an extended trip through the western part of the United States. Dr. Newell spoke at Kansas City on the 11th before the Engineers' Club of that city; at Denver on the 12th, and at Salt Lake City, where he installed a chapter of A. A. E., on the 15th.

Dr. Newell will speak at Boise on the 18th; at Spokane on the following day, and at Tacoma and Seattle on the 21st. He will install the Portland Chapter, with which the Oregon Society of Engineers has voted unanimously to affiliate, on the 22d, and will then proceed to San Francisco, Sacramento and Los Angeles. Chapters will be installed in these three cities, and it is expected that at Los Angeles the installation will include as part of the chapter the Engineers' and Architects' Association of Southern California, a society of about 350 members. On his return journey Dr. Newell will address various groups of engineers, including the Southwestern Society of Engineers at El Paso, the Oklahoma Chapter of A. A. E., and the St. Louis Chapter, where

preliminary arrangements are being made for the 1920 convention of the association, which will be held in that city.

National Free Zone Association.

Delegations representing leading commercial organizations and official bodies from all parts of the country met recently at the headquarters of the Merchants' Association in New York City and organized the National Free Zone Association.

The purpose of the new organization is to work for federal legislation which will permit the establishment of "free zones" and to conduct a campaign of education in order to create sentiment in favor of free zones as aids to foreign trade.

Among the cities represented in the conference were Boston, Chicago, Cincinnati, Detroit, Los Angeles, New York, Baltimore, Newport News, New Orleans, Oakland, Philadelphia, San Francisco, Savannah, Seattle and Tacoma.

J. J. Dwyer, former president of the San Francisco Harbor Commission and now port development commissioner of the San Francisco Chamber of Commerce, explained the idea of the meeting, which originated with him. Arthur McGuirk, special council of the Board of Commissioners of the Port of New Orleans, spoke for the Association of Commerce. All present agreed on the importance of the free

(Continued on page 114.)

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

The village of Frazee, Minn. has advertised for bids for a complete WATER WORKS SYSTEM, plans for which have been prepared by the consulting engineer, W. C. Buck.

Paulsboro, N. J., is soon to receive bids for constructing eleven miles of SEWER, to cost \$150,000. The consulting engineers are Remington & Vosbury.

Dayton, O., is to build SANITARY SEWERS in Mt. Auburn district to cost \$100,000. Plans were prepared by the consulting engineers, Cellarius & Dressler.

PAVING IMPROVEMENTS are to be made by the city of Eufaula, Okla., involving 35 blocks of concrete in the principal street. The plans were prepared by the consulting engineering firm, The Hughes Engineering Co.

Ashland, Ky., has advertised for bids for WATER WORKS IMPROVEMENTS, including basins and a station building, 2,000,000 gallon daily capacity filtration equipment and centrifugal pumping equipment. The consulting engineers are Alvord & Burdick.

Cumberland, R. I., is to build a new SEWERAGE SYSTEM to cost \$150,000, according to plans prepared by the consulting engineer, O. P. Sarle.

A reinforced concrete BRIDGE is to be built by Conshohocken, Pa., over the Schuylkill river, to cost \$600,000, according to plans prepared by the consulting engineer, S. P. Mitchell.

Lake City, S. C., will receive bids shortly for a WATER WORKS and SEWERAGE SYSTEM to cost \$90,000 and \$60,000 respectively. The consulting engineers are The Tomlinson Engineering Co.

A CONCRETE STEEL BRIDGE is to be built by Watertown, N. Y., according to plans prepared by the Concrete-Steel Engineering Co., consulting engineers.

A WATER WORKS SYSTEM and SEWERAGE IMPROVEMENTS are to be built by the village of Hinckley, Minn. The work includes a distribution pipe system, steel tower and tank with 100,000 gallons capacity, the construction of a general sewer, including outlet, and district sewers for seven sewer districts. The consulting engineer is L. P. Wolff.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

AUSTIN MOTOR SWEEPER.

Sprinkles, Sweeps, Collects and Transports.

The Austin motor sweeper has been developed to fill the urgent need for a sanitary street cleaning machine which will sprinkle, sweep and collect all kinds of street dirt in one operation and will transport it quickly, noiselessly and economically. The dust is eliminated by the spraying equipment, which is located far enough in front of the broom to give the water sufficient time to penetrate the dirt before sweeping. Since the whole cleaning process is complete there is no expense of providing collectors to follow the machine and no annoyance of dirt piles scattered by the wind. The sweeper moistens the dirt, but leaves no slimy deposits in the street or gutter. The pavement surface is not damaged. The dirt is swept on a carrier and is conveyed to an ample receptacle.

As the sweeper raises no dust it can be used in the business streets in the day time and it does not interfere with the traffic because its broom length is 7 feet. This length is also advantageous because a larger broom is ineffective on rough and uneven streets. As the machine operates noiselessly it may be used at night in residential districts, thus permitting 24-hour service if desired.

Economy is claimed for the motor sweeper in a number of ways. All the work is done by one man, who needs no preliminary training other than motor truck driving, as the Austin motor sweeper is handled just like any

standard truck. The sweeper need not be laid off on account of bad weather as in the case of horse-drawn sweepers. It is claimed that the motor sweeper can clean four times the area in a given time, moving at a normal speed of eight miles an hour. There is no upkeep cost when the sweeper is not in actual use.

The machine is simple in design and sturdy in construction. It is economical and easy in operation. All parts are accessible without the necessity of crawling under the machine. The whole machine is based on a long study and practice of actual street cleaning so that all conditions are met.

The chassis is of exclusive design and is assembled by the manufacturers. Although specially shaped to distribute the weight of equipment mounted on it, it is designed on lines approved in recent motor truck practice. The truck is balanced on regulation motor springs and is carried on four wheels, assuring steady running and even sweeping. The motor is 4-cylinder, 4-cycle, with geared pump and force-feed lubrication. It develops 49 h. p. The radiator, steering gear, transmission, carburetor, magneto, etc., are all standard and particularly adapted to the service.

The sprinkling equipment consists of a supply tank of 150 gallons' capacity. Between the pump and the spray nozzles is an overflow valve, by means of which the driver controls the volume of water used. The spray nozzles are of solid brass and are placed behind the front wheels and about 14 inches above the pavement. The spray can be

regulated to a sufficient force to penetrate the dirt and make it mealy.

The broom is 36 inches in diameter and 7 feet long. The standard and most satisfactory filler is split bamboo, of which about 175 pounds is used, filler extending 12 inches from the core. The average life of the broom is 150 hours of actual service. The broom spindles rotate in oil-tight boxes, equipped with self-aligning S K F bearings, which automatically adjust themselves to any pavement irregularities, driving the broom into depressions without binding. The broom is suspended on two coil springs and its pressure can easily be regulated by the driver. Two speeds are provided for driving the broom—high for unusually dirty streets or a worn broom, and regular speed for normal use. Throwing the broom into high speed automatically speeds up the conveyor and the water spray pump, the three members being driven from the same shaft. The broom is protected by a sheet steel housing, hinged at the top, allowing of quick and easy replacement of a worn broom.

The conveyor mechanism is of exclusive design. It consists of a sheet steel inclined plane on which the dirt, when thrown by the broom, is picked up by a series of rubber squeegees mounted at frequent intervals over the entire length of the conveyor. These squeegees are carried on high carbon steel chains, and on reaching the apex of the plane the dirt drops into the hopper. The squeegees being released from the pressure of the plant, snap themselves free from the dirt, pass over the upper sprockets and return for an-



AUSTIN MOTOR SWEEPER (Right-hand view)

other circuit. Being self-cleaning, they can collect even mud. Once the dirt or mud is on the conveyor it cannot be forced off or cause trouble by falling on the chain, the sprockets being above the plane. The upper driving sprockets for carrying the chains are fitted with easily replaced wooden pins which break before clogging can cause any damage. Bearings and oil pockets assure easy operation.

There is ample clearance between the lower end of the conveyor and the pavement, so that the conveyor does not come underneath the broom or touch it. The broom revolves at a speed which throws the dirt on the conveyor, not merely pushes it. The conveyor does not gather the dirt, but allows it to remain undisturbed until engaged by the broom. The broom cannot be caught in or torn by the conveyor.

The hopper or dirt container is of all-steel construction, provided with heavy steel bottom doors, opening and closing of which are controlled by lever at driver's seat. The capacity of the hopper and of the water tank are so proportioned that as the tank becomes empty the hopper is about full and one stop of the motor sweeper can be used to fill the tank and dump the load.

The accompanying illustrations show a view of the sweeper and a detailed view of the rear end, bringing out sweeper and conveyor details. The sweeper is made by the Austin Manufacturing Co., Chicago, Ill., and sold by the Austin-Western Road Machinery Co., Chicago.

INDUSTRIAL NEWS

The Barber Asphalt Paving Company, Land Title Building, Philadelphia, Pa., has issued a new Iroquois tool catalogue describing the complete line of asphalt tools. These include asphalt tampers and smoothers, concrete tampers, asphalt sandals, asphalt rakes, patching hoes, cutters, shovels and street scrapers, wire and rattan push brooms, stirring rods, asphalt and tar dippers, asphalt melting pots and pouring pots, brick filling pots, stone and binder forks, two-man stone rakes, old material pans, patrol kettles, fire wagons, asphalt hand rollers, surface heaters, etc. The tools are fully described and illustrated. The catalogue is for general distribution to contractors, engineers, purchasing agents, superintendents, dealers and all others interested.

The Clinton-Wright Wire Company, Worcester, Mass., has been organized by the combination of the **Clinton Wire Cloth Company**, **Wright Wire Company**, **Morgan Spring Company** and **National Manufacturing Company**. The companies have joined forces and co-ordinated manufacturing plants and facilities for greater service in supply-

ing the large variety of wire and wire products manufactured by them and known to the trade for sixty years. The products of the new company include wire, wire cloth, wire screen cloth, wire netting, wire rope, wire lath, wire springs, wire forms, special manufacturers' wire, wire goods, perforated metals, electrically welded fabric, welded sheathing, wire fencing, ornamental wire and iron. In addition to the administrative offices at Worcester there are factories at Worcester, Clinton and Palmer. Branch offices and warehouses are located at Boston, Providence, New York, Philadelphia, Chicago, Tulsa and San Francisco.

NEWS OF THE SOCIETIES

(Continued from page 112)

zone idea and approved its principles. The free zone plan asks for federal authorization of the organization of zones in ports, in which areas goods imported could be manufactured or handled in any way and re-exported without payment of customs.

William Kent, member of the United States Tariff Commission, explained proposed legislation to bring about the free zone plan, including the Sanders-Sheppard bill.

The constitution adopted provides for a board of directors of fifteen, composed of representatives of members, seven from the Atlantic region (at least one from the southeast Atlantic); three from the Pacific and five from the region between the Lakes and the Gulf.

Campaigns are to begin at once, about \$10,000, at least, being needed

for the first year's work. Headquarters will be in Washington.

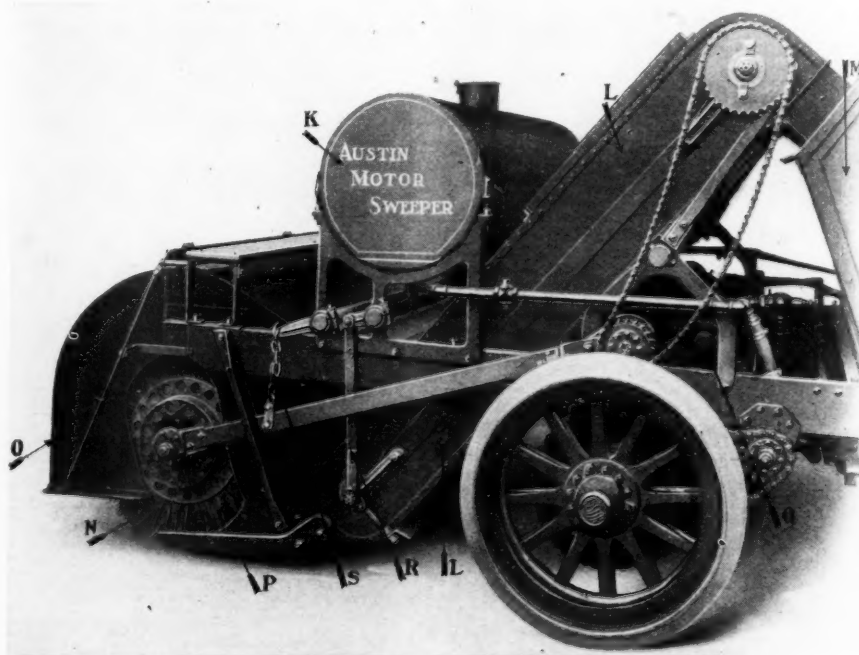
The following officers were elected: President, Arthur McGuirk, New Orleans; vice-president, Lucius R. Eastman, chairman, committee on foreign trade, Merchants' Association, New York; directors, J. J. Dwyer, San Francisco Chamber of Commerce; Charles G. Edwards, Savannah Board of Trade; William G. Garland, Los Angeles Chamber of Commerce; William O. Hempstead, Philadelphia House, Chamber of Commerce, and also Board of Trade; T. S. Lippy, Seattle Chamber of Commerce and Commercial Club; A. M. Lockett, New Orleans Association of Commerce; Austin W. McLanahan, Baltimore Export and Import Board of Trade and Merchants' and Manufacturers' Association; R. Goodwin Rhett, Charleston Chamber of Commerce; Semmes Steele, Galveston Chamber of Commerce.

PERSONALS

Lotter, H. H., has been appointed by the Bureau of Public Roads resident engineer of Missouri, with office in Jefferson City.

Palmer, J. G., has been appointed city engineer of Kewanee, Ill. He was previously assistant engineer, Department of State Engineer and Surveyor of New York, and United States junior engineer, Corps of Engineers, United States Army.

Ash, L. R., city manager, Wichita, Kan., has resigned to re-establish his connection with Harrington, Howard & Ash, Kansas City. The resignation is to take effect not later than October 1.



AUSTIN STREET SWEEPER (Sweeping end view)

K, water tank—L, elevator, or conveyor housing—M, dirt receptacle or hopper
—N, broom—O, broom housing—P, dust pan—Q, water pump for spray
—R, rod to raise or lower conveyor—S, rod and chain to raise and lower broom.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STREETS AND ROADS.

Ala., Guntersville. 11 a.m., Aug. 26. Grading, draining and surfacing with macadam 5.60 mi. road, involving 3 acres clearing and grubbing, 1,968 cu. yd. rock excavation, 8,600 cu. yd. stone surfacing, etc.—W. S. Keller, State Hwy. Dept., Montgomery.

Ala., Mobile. Aug. 30. 3½ mi. old shell road and 2¼ mi. scarifying, shaping and rolling old road, new metal foundation and paving with monolithic brick, concrete, asphaltic concrete or rock asphalt.—Co. Engr.

Ark., Little Rock. 2 p.m., Aug. 21. 18.6 mi. gravel road.—Lund & Hill, Engrs., Little Rock.

Ark., DeQueen. 2 p.m., Aug. 21. 18.6 mi. gravel road, involving 24 acres clearing and grubbing, 474 rods fence removing, 107,000 cu. yd. earth work, 29,920 cu. yd. gravel, 860 ft. 12 to 24-in. culvert, bridges, etc.—Lund & Hill, Cons. Engrs.

Cal., Stockton. 10 a.m., Aug. 20. Street improvements.—E. D. Graham, Clk., Bd. Supvrs.

Colo., Denver. Aug. 24. Paving alley paving districts No. 50 and 51 with concrete.—J. B. Hunter, City Engr.

Del., Georgetown. 1 p.m., Aug. 19. 3.4 mi., involving 0.9 acres clearing and grubbing, 12,500 cu. yd. excav., 5,500 cu. yd. borrow, 250 lin. ft. rein. concr. pipe, 350 lin. ft. relaid pipe, 4,675 tons slag for macadam or 4,900 cu. yd. cement concr. roadway, 110 joints, etc.; 2.3 mi., involving 4.5 acres clearing and grubbing, 11,000 cu. yd. excav., 4,000 cu. yd. borrow, 246 lin. ft. 15 to 24-in. rein. concr. pipe, 3,200 tons slag for macadam or 3,300 cu. yd. cement concr. roadway, 90 joints, etc.; 4.85 mi., involving 16,400 cu. yd. excav., 300 lin. ft. 15 to 24-in. rein. concr. pipe, 6,850 tons slag for macadam or 6,940 cu. yd. cement concr. roadway, 170 joints, etc.; 4.92 mi., involving 12,000 cu. yd. excav., 1,200 cu. yd. borrow, 214 lin. ft. 12 to 24-in. rein. concr. pipe, 6,740 tons stone for macadam or 6,060 cu. yd. cement concr. roadway, 110 joints, etc., all in Sussex County.—C. M. Upham, Chief Engr., State Hwy. Dept., Dover.

Fla., Arcadia. Sept. 1. Paving 98,000 sq. yd. roads in De Soto Co., involving 3,700 cu. yd. grading, 17,400 cu. yd. sand cushion, 227 cu. yd. concr. in culverts, 24,000 lb. reinforcing steel and 2,000 ft. lumber.—E. V. Camp, Engr., Punta Gorda.

Fla., Haines City. noon, Aug. 29. Paving, curbing and street improvements.—J. R. Yale, Town Clk.

Ga., Thompson. 11 a.m., Aug. 25. Two reinforced concrete bridges.—Mitcham & Wright, Engrs., Flatiron Bldg., Atlanta.

Ind., Columbus. 10 a.m., Sept. 2. Constructing two gravel roads, 5,280 ft. and 13,332 ft.—R. Henderson, Co. Aud.

Ind., Muncie. 10 a.m., Sept. 2. Constructing 8,973.5 ft. bituminous macadam.—K. P. Drago, Co. Aud.

Ind., Bloomfield. 2 p.m., Sept. 2. Constructing 8 macadam roads in various townships.—H. Corbin, Co. Aud.

Ind., Washington. 2 p.m., Sept. 2. Constructing 10 roads in various townships.—J. G. Clark, Co. Aud.

Ind., Corydon. 2 p.m., Sept. 3. Constructing 2 stone roads, 15,817 ft. and 15,580 ft.—S. E. Mauck, Co. Aud.

Ind., Rockville. 1 p.m., Sept. 3. Constructing 10,560 ft. gravel road.—R. E. Porter, Co. Aud.

Ind., Ft. Wayne. 10 a.m., Sept. 11. Constructing 2 roads in Lake Twp. 1.78 miles and 2.30 miles.—A. C. McCoy, Co. Aud.

Ind., Noblesville. 10 a.m., Sept. 2. Constructing gravel road.—H. O. Cottingham, Co. Aud.

Ind., Crown Point. 1 p.m., Aug. 25. Three gravel roads in Ross, St. John and Cedar Creek Twps.—G. M. Foland, Co. Aud.

Ind., Crown Point. 1 p.m., Sept. 8. Two gravel roads in Calumet and Hobart Twps.—G. M. Foland, Co. Aud.

Ind., Anderson. 10 a.m., Aug. 26. 44,132 ft. concrete roads in Adams twp.—E. T. Flahavin, Co. Aud.

Ind., Evansville. 10 a.m., Aug. 25. Constructing rock and gravel road.—W. Copeland, Co. Aud.

Ind., Muncie. 10 a.m., Sept. 2. Constructing bituminous macadam road, 2,149 ft.—J. P. Drago, Co. Aud.

Ind., Greenfield. 2 p.m., Aug. 29. Constructing gravel roads in three townships, 14,357 ft., 5,362 ft. and 10,800; also 7,000 ft. crushed stone road.—H. J. Rhue, Co. Aud.

Ind., Fowler. 1 p.m., Sept. 1. Constructing 10,560 ft. gravel road.—W. Mankey, Co. Aud.

Ind., Rensselaer. 2 p.m., Sept. 1. Constructing roads in five townships, one gravel and four stone.—J. P. Hammond, Co. Aud.

Ind., Vernon. 2 p.m., Sept. 1. 5,810 ft. crushed stone road.—E. Bemish, Co. Aud.

Ind., Covington. 2 p.m., Sept. 2. Constructing gravel road.—H. W. Newlin, Co. Aud.

Ind., Columbus. 10 a.m., Sept. 2. 29,154 ft. stone and gravel roads.—R. Henderson, Co. Aud.

Ind., Vevay. 1 p.m., Sept. 2. Constructing two limestone roads, 14,248 ft. and 15,483 ft.—W. A. Reeves, Co. Aud.

Ind., Lawrenceburg. 10 a.m., Sept. 2. 10,264.5 ft. broken stone road.—A. E. Jackson, Co. Aud.

Ind., Boonville. 10 a.m., Sept. 2. Constructing road.—W. A. Campbell, Co. Aud.

Ind., Brownstown. 1 p.m., Sept. 2. Constructing stone and gravel road.—A. Luedtke, Co. Aud.

Ind., Indianapolis. 10 a.m., Aug. 20. Improving about 15 streets.—Bd. Pub. Wks.

La., Lake Charles. 10 a.m., Aug. 20. Paving streets, involving 25,000 sq. yd. paving and curbing and gutter.—E. S. Crosby, Comr. Sts. and Parks.

Mass., Boston. noon, Aug. 19. Constructing 14,000 ft. hwy in towns of Southwick and Agawam.—State Hwy. Comm.

Mass., Boston. noon, Aug. 19. Two state highway sections, including 5,300 ft. grading and 1,400 ft. macadam.—State Hwy. Comm.

Mich., Lansing. Aug. 19. Shaping, surfacing with gravel and drainage structures on 2,956 mi. 16-ft. road in Shiawassee Co., involving 24,364 sq. yd. gravel.—F. F. Rogers, State Hwy. Comr.

Mich., Corunna. 1:30 p.m., Aug. 19. Shaping, draining and graveling about 2.6 mi. road.—F. F. Rogers, State Hwy. Comr., Lansing.

CONTRACTS AWARDED ITEMIZED PRICES

Minn., Faribault. 2 p.m., Aug. 19. 14.4 mi. fed. aid projects Nos. 68, 69 and 77 in Rice Co., involving 99,039 cu. yd. excav., 17,407 cu. yd. gravel surface, furnishing and installing 520 lin. ft. 15-in. and 698 lin. ft. 18-in. portable culverts, 137 cu. yd. standard concr. culverts.—F. M. Kaisersatt, Co. Aud.

Minn., Brainerd. 2 p.m., Aug. 23. 3.7 mi. fed. aid proj. No. 73, involving 3 acres clearing and grubbing, 19,000 cu. yd. grading, 13,000 cu. yd. overhaul, 5,000 lin. ft. scarifying macadam road, 1,000 lin. ft. drain tile, 662.5 ft. 12 to 24-in. portable culvert, 39,400 sq. yd. concr. paving, etc.; also 7.1 mi. fed. aid proj. No. 51, involving 39 acres clearing and grubbing, 46,339 cu. yd. grading, 4,950 cu. yd. overhaul, 3,450 lin. ft. guard rail, 32,600 lin. ft. shaping and compacting gravel haul, etc., both projects in Crow Wing Co.—C. W. Mahlum, Co. Aud.

Minn., Farmington. Aug. 19. Paving 20 blocks 18 ft. wide, involving 31,600 sq. yd. wood blocks, 1,500 cu. yd. grading and 11,000 ft. curbing.—Druar & Smith, Globe Bldg., St. Paul.

Mo., Elsberry. Aug. 20. 6½ mi. gravel road.—J. A. Finley, Secy.

Mo., Fulton. 5 p.m., Sept. 4. Paving with macadam or gravel, one street.—F. E. Baker, Co. Engr.

Mo., Malden. 2 p.m., Aug. 19. Paving, curbing, draining and other street improvements.—W. R. Heagler, Co. Engr.

Mo., St. Louis. Noon, Aug. 26. Paving street with bitulithic pavement and granite curb.—E. R. Kinsey, Pres., Bd. Pub. Serv.

Mo., Independence. 10 a.m., Sept. 2. Grading, surfacing with bituminous macadam, constructing earth shoulders, ditches and culverts, etc., on 3.1 miles road in Jackson Co.—O. C. Sheley, Co. Hwy. Engr., Courthouse.

Neb., Peru. Aug. 27. Paving 4,700 ft. 24-ft. roadway, involving 11,654 sq. yd. vertical fibre on 5-in. concrete base, 1,168 lin. ft. concrete curbing, 13,768 cu. yd. earth excavation and 527 cu. yd. gravel for drives.—G. E. Johnson, State Hwy. Engr., Lincoln.

Neb., Fairmont. Aug. 19. Paving 3,500 ft. city streets, involving 14,500 sq. yd. vertical fibre, asphalt or concrete on 5-in. concrete base, 7,200 lin. ft. concrete gutter and curb and 1,800 cu. yd. earth excavation.—Grant, Fulton & Letton, 505 Bankers Life Bldg., Lincoln.

Neb., Red Cloud. Aug. 25. 34 blocks streets and four blocks alleys with brick, sheet asphalt or asphaltic concrete.—City Clk.

N. H., Manchester. 2 p.m., Aug. 19. Paving highways with sheet asphalt, topeka or bitulithic surface on concrete or broken stone foundation, including excavation, grading, etc.—S. J. Lord, Dir., Dept. Pub. Wks.

N. J., Elizabeth. 3 p.m., Aug. 19. Finishing oil for dust-laying purposes.—J. L. Bauer, Co. Engr.

N. J., Elizabeth. 3 p.m., Aug. 19. Repairing bituminous concrete roadways; constructing two street intersections with stone and bituminous concrete.—J. L. Bauer, Co. Engr.

N. J., Kenilworth. 8 p.m., Aug. 18. Repairs to surfaces and surface treatment with light bituminous dressing on all macadam roads.—J. L. Bauer, Co. Engr., Elizabeth.

BIDS ASKED FOR

N. J., Trenton. 10.30 a.m., Aug. 27.
Resurfacing with gravel road in Burlington Co., involving 13,170 cu. yd. compacted.—A. L. Grover, Chief Clk., State Hwy. Comm.

N. Y., Albany. 1 p.m., Aug. 26.
Constructing 6.36 mi. bituminous macadam road in Oswego County; 6.06 mi. bituminous macadam and concrete and 5.5 mi. concrete in Cayuga County—State Hwy. Comm.

N. Y., Albany. 1 p.m., Aug. 26.
Improving highways in following counties: 7.33 mi. in Montgomery, 1.27 mi. in Rensselaer, 9.06 mi. in Saratoga and 5.86 mi. in Suffolk Cos.; also completing highways in following counties: 11.50 mi. in Cayuga, 5.65 mi. in Chautauqua, 10.36 mi. in Franklin, 8.34 mi. in Livingston, 12.19 mi. in Madison, 6.36 mi. in Oswego, 2.13 mi. in Seneca, 10.24 mi. in Ulster and 2.06 mi. in Washington Cos., and also completing road repair in Cortland Co.—F. S. Greene, State Hwy. Commr.

N. Y., Niagara Falls. 10 a.m., Aug. 18.
Street and alley improvement, involving 7,350 sq. yd. pavement, new and reset curb and 1,785 sq. ft. cement sidewalk.—E. J. Fort, City Mgr.

N. C., Asheville. noon, Aug. 25.
Constructing 2 mi. macadam road, 14 ft. wide, 8 ins. thick (rolled to 6 ins.), constructing culvert and removing about 50 cu. yds. earth; constructing 4½ mi. macadam road, 14 ft. wide, 9 in. thick (rolled to 7 in.), removing about 500 cu. yds. earth and stone—Bd. of County Commissioners.

O., Toledo. noon, Aug. 19.
Improving streets with concrete or vitrified brick, asphalt or creosoted wood blocks on concrete foundation with necessary curbing, headers, drainage, grading, installing sewer connections, etc.—D. H. Goodwillie, Dir. Pub. Serv.

O., Columbus. noon, Aug. 19.
Grading, draining, curbing, repaving roadway with asphalt or brick, laying water service pipe and sewer connections.—G. A. Borden, Dir. Pub. Serv.

O., Van Wert. Sept. 2.
Improving road in Van Wert Co.—R. J. Jones, Court House.

O., Canton. Aug. 25.
Concrete culvert construction.—W. C. Schick, Co. Clk.

O., Kenton. Aug. 20.
Paving with asphalt or asphaltic concrete.—R. E. Radcliff, Clk., Serv. Dept.

O., Xenia. noon, Aug. 28.
60,000 sq. yds. pavements.—Kenyon Riddle, City Mgr.

O., Cleveland. Aug. 22.
Grading, draining and improving boulevards.—Park Engr.

Pa., Waynesburg. 1.30 p.m., Aug. 18.
Reconstructing 3,125.4 lin. ft. rein. pavement from 16 to 30 ft. wide in borough of Carmichaels, Greene Co.—Co. Comrs., Court House.

Pa., Waynesburg. 1.30 p.m., Aug. 18.
Reconstructing 29,567.6 lin. ft. rein. concr. and vitr. brick pavement 16 ft. wide in Greene Co.—T. B. Dinsmore, Co. Engr., Peoples Bank Bldg.

Pa., Harrisburg. 10 a.m., Aug. 19.
Reconstructing pavements in following counties: 21,299 lin. ft. reinforced concrete in Allegheny Co.; 11,640 ft. reinforced concrete in Armstrong Co.; 56,111 ft. reinforced concrete in Bedford Co.; 312 ft. vitrified brick in Bucks Co.; 13,232 ft. reinforced concrete and hillside brick in Cambria Co.; 5,651 ft. reinforced concrete in Carbon Co.; 29,232 ft. bituminous macadam on Telford foundation in Chester Co.; 7,314 ft. bituminous surface course on Telford foundation in Delaware Co.; 4,101 ft. vitrified brick in Fayette Co.; 71,063 ft. bituminous surface course on concrete foundation or reinforced concrete in Lackawanna and Wyoming Cos.; 16,218 ft. reinforced concrete in Lehigh Co.; 31,418 ft. bituminous surface course on concrete foundation or reinforced concrete in Luzerne Co.; 15,683 ft. bituminous surface course on concrete foundation or reinforced concrete in Mercer Co.; 8,286 ft. reinforced concrete in Northampton Co.; 2,431 ft. reinforced concrete in Mercer Co.; 22,287 ft. reinforced concrete in Washington Co. and 89,002 ft. reinforced concrete and Hillside brick in Westmoreland Co.—L. S. Sadler, State Hwy. Commr.

Pa., Harrisburg. 10 a.m., Sept. 2.
37,001 lin. ft. one-course reinforced concrete and hillside vitrified brick and 7,857 lin. ft. bituminous surface course

on concrete foundation and hillside vitrified brick, or one-course reinforced concrete in Adams Co.; 16,579 lin. ft. reinforced concrete in Butler Co.; 10,129 lin. ft. one-course reinforced concrete in Carbon Co.; 12,355 lin. ft. bituminous surface course on concrete foundation, or one-course reinforced concrete in Centre Co.; 32,128 lin. ft. bituminous surface course on telford foundation in Chester Co.; 10,507 lin. ft. reinforced concrete in Clarion Co.; 10,822 lin. ft. one-course reinforced concrete in Clearfield Co.; 4,265 lin. ft. bituminous surface course and hillside vitrified brick on concrete foundation or one-course reinforced concrete in Clinton Co.; 37,133 lin. ft. one-course reinforced concrete and hillside vitrified brick or two-course reinforced concrete and hillside vitrified brick in Crawford Co.; 64,227 lin. ft. one-course reinforced concrete and 7,900 lin. ft. bituminous surface course and hillside vitrified brick on concrete foundation or one-course reinforced concrete and hillside vitrified brick in Erie Co.; 3,812 lin. ft. one-course reinforced concrete in Indiana Co.; 31,268 lin. ft. one-course reinforced concrete or vitrified brick in McKean Co.; 24,049 lin. ft. bituminous surface course on concrete foundation and hillside vitrified brick on one-course reinforced concrete in Mifflin Co.; 12,935 lin. ft. bituminous surface course on concrete foundation or one-course reinforced concrete in Potter Co.; 32,320 lin. ft. bituminous surface course on concrete foundation or one-course reinforced concrete in Snyder Co.; 6,191 lin. ft. one-course reinforced concrete and vitrified brick in Susquehanna Co.; 24,113 lin. ft. bituminous surface course on concrete foundation or one-course reinforced concrete in Tioga Co., and 4,136 lin. ft. bituminous surface course on concrete foundation in York Co.—L. S. Sadler, State Hwy. Commr.

Pa., Ebensburg. 2 p.m., Aug. 25.
Reconstructing 17,490 ft. road between Allegheny and East Carroll Twp. with 4-in. vitrified clay paving block on concrete base, 3-in. vitrified clay paving block on concrete base or one-course reinforced concrete pavement.—D. W. Dillman, Twp. Engr., 80 Altoona Trust Bldg., Altoona.

Pa., Ebensburg. 1.30 p.m., Aug. 18.
Reconstructing 10¼ mi. highway with 16-ft. roadway of vitrified brick on combination concrete base and curb.—O. P. Thompson, Twp. Engr.

Pa., Archbald. 7.30 p.m., Aug. 18.
Grading, paving and curbing three streets.—W. A. Taylor, Boro. Engr., Olympian, Pa.

S. D., Redfield. 2 p.m., Aug. 22.
Improving state highway in Grant Co., involving 12 sq. rds. clearing and grubbing, 46,340 cu. yd. earth excavation, 4,820 yd. street overhaul and excavation, 1,520 lin. ft. corrugated metal pipe from 12 to 24-in., 266.44 cu. yd. concrete, 11,560 lbs. steel reinforcement, etc.; also completing portion of state highway in Brown Co., involving 28,708 cu. yd. earth excavation, etc.—Inter-State Surety Co.

Tex., Bryan. 10 a.m., Aug. 18.
Constructing 19.33 mi. state hwy., including 8.73 mi. gravel roadway and 1.6 mi. concrete in Brazos County.—H. Boyett, Co. Engr.

Tex., Houston. noon, Aug. 25.
Paving on 9 streets, involving 51,000 sq. yds. with any of following materials: 1½-in. asphaltic concr. with 1-in. binder, 1½-in. sheet asphalt with 1-in. binder, 2-in. bitulithic, 2-in. Uvalde rock asphalt or 3-in. vertical fiber brick—City Engr.

Wash., Olympia. Aug. 25.
21.9 mi. grading, draining and surfacing with crushed rock in Whitman Co.; 5.5 mi. clearing grading and constructing bridge in Skagit Co.; 1.9 mi. clearing grading in Snohomish Co.; 6.7 mi. clearing, grading and graveling in Cowlitz Co.; constructing concrete bridge in Thurston Co. and steel bridge in Skamania and Klickitat counties; four mi. grading and paving with concrete in Clarke Co., and 7.8 mi. clearing and crushed rock surfacing in Spokane Co.—State Hwy. Bd.

Wash., Tacoma. 11 a.m., Aug. 21.
Paving two roads.—E. A. White, Co. Engr.

W. Va., Morgantown. noon, Aug. 23.
4.5 mi. 16-ft. 1-course reinforced concrete pavement.—J. M. Gregg, Co. Clk.

W. Va., Princeton. noon, Aug. 27.
Grading 18-ft. road in Mercer Co.—Co. Engr.

SEWERAGE.

Conn., Thompsonville. Aug. 19.
Constructing sewer, involving 1,350 ft. 15-in., 1,650 ft. 12-in., 1,125 ft. 10-in. and 1,900 ft. 6-in. tile and 16 manholes.—W. J. Hines, Supt. Sewer Comm.

Conn., Stamford. 2 p.m., Aug. 23.
Sewage disposal works, including Imhoff tanks, sludge drying beds, laboratory building, storage basin and screen chamber.—Fuller & McClintock, Engrs., 170 Broadway, N. Y. City.

Fla., Chipley. 6 p.m., Aug. 18.
5¼ mi. 8 to 15-in. sanitary sewers.—Carter & Butts, Consulting Engr., Geneva, Ala.

Ga., Cartersville. 2 p.m., Aug. 20.
16 mi. sanitary sewers, from 8 to 15-in., with necessary appurtenances.—J. B. McCrary Co., Atlanta.

Ind., Indianapolis. 10 a.m., Aug. 21.
Pumping machinery and equipment for Div. 2 of sewage disposal plant, involving 3 electric motor-driven centrifugal pumping units with 25 million gal. daily capacity, 3 electric motor-driven centrifugal pumping units with 15 million gal. daily capacity; mechanically operated sewage screens with 100 million gal. daily capacity; electrically operated locomotive crane complete with bucket and attachments.—F. C. Lingenfelter, Pres. Bd. Sanitary Comrs.

Ind., Hartley. 8 p.m., Aug. 20.
Storm water sewer system, involving reinforced concrete rectangular and vitrified sewer or block circular sewer pipe.—H. F. Broders, Town Clk.

Minn., Walnut Grove. Aug. 25.
Laying 26,000 ft. sewers.—Druar & Smith, Globe Bldg., St. Paul.

Mo., Kansas City. 2 p.m., Aug. 19.
Constructing Turkey Creek sewer, two sewage pumping stations, laterals and extensions of existing sewers, consisting of 1.2 mi. main sewer of reinforced concrete and 3½ mi. laterals and extensions of concrete, segment blocks or clay pipe.—A. D. Ludlow, Engr. of Sewers, City Hall.

N. J., Elizabeth. 3 p.m., Aug. 19.
New culvert or cross-drain with outlet pipe, new cross-drain and extensions.—J. L. Bauer, Co. Engr.

N. J., Somerville. 8 p.m., Aug. 25.
2,500 lin. ft. storm sewer, from 18 to 42-in., with necessary appurtenances.—A. W. Vars, Engr., Town Hall, Westfield.

N. J., Hackensack. 8 p.m., Aug. 18.
Disposal works, flotation basins, power house, power transmission lines, air lines, force mains, ejectors, ejector stations, etc.; pipe, concrete and other sewers, involving 101,450 lin. ft., with manholes, catch basins and other equipment.—L. Lozier, Engr., Hackensack Impvt. Comm., Bank Bldg., Main and Mercer Sts.

N. D., Mandan. Aug. 21.
Sanitary sewerage system, involving 14,000 lin. ft. 8 to 12-in. pipe, 36 manholes and lift station.—Black & Griffin, Engrs.

O., Toledo. noon, Aug. 19.
Sanitary sewers in two streets.—D. H. Goodwillie, Dir. Pub. Serv.

O., Columbus. noon, Aug. 19.
Laying sewers in two city streets.—G. A. Borden, Dir. Pub. Serv.

O., Xenia. noon, Aug. 28.
Storm and sanitary sewers.—Kenyon Riddle, City Mgr.

O., Euclid. noon, Sept. 8.
Constructing storm water sewer.—F. A. Pease, Engr., Marshall Bldg., Cleveland, O.

O., Kent. Aug. 21.
Sanitary sewerage system, renewals, repairs, etc.—F. W. Bowers, Clk. Bd. Education.

O., Lima. 1 p.m., Aug. 28.
Relief sewer, involving 16,340 ft. circular and semi-circular monolithic concr. segment blk., vitr. segment blk., rein. concr. pipe or vitr. pipe, also outlet abutment, overflow chamber with special junctions at various points; main relief sewers, involving 12,200 ft. circular and semi-circular monolithic concr. segment blk., vitr. segment blk., rein. concr. pipe or vitr. pipe, also weir chamber with special junctions at various points.—Fuller & McClintock, 170 Broadway, N. Y. C., or V. C. Miller, city engr.

BIDS ASKED FOR

Pa., Oil City. 4.30 p.m., Aug. 21.
Sewerage and paving construction, involving 1,600 cu. yd. grading, 2,800 lin. ft. concrete curb, 2,800 sq. yd. paving, 11,000 sq. ft. sidewalks and 2,250 ft. 6 to 15-in. sewers.—B. B. Weber, City Engr.

Tex., Port Arthur. 11 a.m., Aug. 29.
300,000-gal. elevated water tank 100 ft. to bottom; sale of second-hand 100,000 gal. tank at present erected, 100 ft. high.—C. E. Ridley, City Engr.

W. Va., Clarksburg. noon, Aug. 30.
One 4 m. g. d. centrifugal pump, gear driven from gas engine for total lift of 350 ft.; one 4 m. g. d. centrifugal pump, gear driven from condensing steam turbine, complete with condensing apparatus for total head of 350 ft.—Fuller & McClintock, Engrs., 170 Broadway, N. Y. C.

Wis., Appleton. 4 p.m., Aug. 20.
Sewers in city street.—E. L. Williams, Clk.

N. C., Fayetteville. Aug. 26
One triple combination pumping engine and hose car, capacity of pumper 600 and 750 gal.; also 2,000 ft. fire hose.—W. T. Jones, Chf., Fire Dept.

Pa., Archbald. 7.30 p.m., Aug. 18.
Furnishing one 4-cylinder combination chemical and hose car.—M. J. Caffrey, Secy., Boro. Council.

Pa., Allentown. 9 a.m., Aug. 20.
Furnishing one gasoline motor-driven, two-wheel, front-drive, 75-ft. aerial hook and ladder truck; six gasoline motor-driven 500 to 600-gal. and six 750 to 800-gal. pumping engines and hose car combined; three gasoline motor-driven double 40-gal. chemical engines and hose car combined.—City Mayor.

Wash., Seattle. 10 a.m., Aug. 22.
Furnishing 7,000 ft. 2½-in. cotton rubber-lined fire hose, 1,000 ft. ¾-in., and 1,000 ft. 1-in. rubber chemical hose.—Bd. Public Wks.

O., Cincinnati. noon, Aug. 29.
Constructing concrete bridge in Anderson Twp.—County Comm.

O., Toledo. Aug. 19.
Three culverts in Lucas Co.—Gabe Cooper, Co. Aud.

O., Willoughby. Aug. 25.
Reinforced concrete viaduct and approaches over Chagrin River.—W. J. Watson and W. P. Brown, Engrs., 1101 Hippodrome Bldg., Cleveland.

Pa., Harrisburg. 10 a.m., Aug. 18.
Thirteen bridges in Armstrong Co., eight in Berks Co., six in Cameron Co., one in Clarion, three in Clearfield, one in Columbia, two in Crawford, two in Erie, two in Fayette, two in Indiana, two in Jefferson, three in Lehigh, four in Monroe, one in Montgomery, one in Pike, Schuylkill and Sullivan Cos., five in Susquehanna Co., one in Venango, Warren and Wayne Co., and five bridges in Wyoming Co., 66 in all.—L. S. Sadler, State Hwy. Comr.

Pa., Huntingdon. 11 a.m., Aug. 18.
2 rein. concr. bridges, 50-ft. span, in Huntingdon Co.—J. Murray Africa Co., Engrs.

R. I., Providence. noon, Aug. 26.
Constructing 4 state bridges, involving 75, 70, 775 and 97 cu. yds. concrete; also removing old structures—Board Public Roads.

Wash., Olympia. 2 p.m., Aug. 25.
Constructing reinforced concrete T-beam bridge, consisting of six 28-ft. spans.—James Allen, State Hwy. Comr.

Dominican Republic, Santo Domingo. 10 a.m., Sept. 30.
Rein. Concr. bridge and approaches over the Rio Yaque del Sur in the Province of Azua, consisting of 2 rein. concr. arches 91 ft. span each, and 4 slab spans 22 ft. each, 304 ft. long and 18 ft. 9 in. wide.—Dir. Gen. Pub. Wks.

Ont., Pickering. noon, Aug. 19.
Constructing concrete abutment and concrete roadway and sidewalks for highway bridge—W. A. McLean, Dep. Min. of Hwys., Toronto.

MISCELLANEOUS.

D. C., Washington. 2 p.m., Aug. 19.
Repairing and wharfs.—Chief Clk., Engrg. Dept., 427 Dist. Bldg.

D. C., Washington. 10:30 a.m., Sept. 2.
Cargo handling cranes, air compressors, electric motor and spares, starting panels, motor-driven triplex pump, Hamilton-Corliss engine, fiber conduit bends, steel dump cars, etc.—A. L. Flint, Gen. Purch. Agt., Panama Canal.

Ia., Washington. 1 p.m., Aug. 19.
Constructing Drainage Dist. No. 6.—A. L. Griffith, Co. Aud.

Ky., Addison. Noon, Aug. 27.
Lock and abutment for dam No. 45, Ohio River.—U. S. Engr. Office, Louisville.

La., Alexandria. 8 p.m., Sept. 15.
Improving drainage.—Bd. Comm. of Red River Levee Dist.

Minn., Alexandria. 10 a.m., Aug. 28.
One gravel loading apparatus with bin, etc., and one 8 to 12-h. p. engine to operate same.—V. Thomas, Co. Aud.

Minn., Granite Falls. 2 p.m., Aug. 28.
Judicial Ditch No. 2, involving 747,380.4 cu. yd. excavation and 190,200 ft. 6 to 26-in. tile, etc.—G. H. Wilson, Co. Aud.

Minn., Hastings. 2 p.m., Aug. 18.
Furnishing mechanical loader for loading gravel from pits into auto trucks.—R. W. Downs, Co. Aud.

Miss., Carrollton. Aug. 20.
Channel two mi. long with 90-ft. base, involving 3.2 mi. levee, 461,500 cu. yd. drag-line excavation and 6 acres clearing.—Morgan Engr. Co., Goodwyn Institute, Memphis, Tenn.

Miss., Clarksdale. Sept. 1.
Furnishing one light and one heavy farm tile ditcher.—R. T. Collier, Drainage Engr.

N. Y., New York. noon, Sept. 2.
Dredging in Shrewsbury river, N. J.—U. S. Engr. Office, Army Bldg., 39 Whitehall st.

N. Y., Syracuse. 1.30 p.m., Aug. 25.
Garbage reduction plant.—R. D. Roney, 311 City Hall.

WATER SUPPLY.

D. C., Washington. 2 p.m., Aug. 20.
Sale of one horizontal, triple-expansion, crank and flywheel Nordberg pumping engine, 6,700,000 gal. daily capacity.—Secy., Bd. Comrs., 509 District Bldg.

D. C., Washington. Aug. 19.
Furnishing 342 tons 8-in. cast-iron water pipe and 32 tons special water pipe.—Dist. Comrs., Dist. Bldg.

Mass., Boston. noon, Aug. 22.
Furnishing and installing sluice gates, air rams and counterweights at gate house, Moon Island reservoirs, Scantum, Mass.—T. F. Sullivan, Comr. Pub. Wks., 508 City Hall Annex.

N. Y., New York. 3 p.m., Aug. 19.
Water supply connections at U. S. Marine Hospital at Stapleton.—F. A. Lang, Chief Engr., 731 Custom House.

O., Nat'l Military Home. 1 p.m., Aug. 20.
Furnishing one compound duplex Smith-Vaile pump, 5 million gal. capacity, size 24x36x18 in.; semi-rotative steam valves, water plunger, fibrous packed steel piston rods; two 125-h. p. R. T. Brownell boilers; three 100-h. p. Stillwell open heaters.—Capt. J. E. Gimperling, Quartermaster.

Pa., Scranton. noon, Aug. 19.
Completing concrete and cement work on reservoir, 2,000,000-gal. capacity.—C. R. Acker, Secy., 624 Connell Bldg.

Pa., Shenandoah. 10 a.m., Aug. 19.
Furnishing and setting 2 centrifugal pumps of 2 m. g. d. each, with motors; furnishing and installing 1 deep well pump of 200 g. p. m. capacity, with motor; pumping stations, transformer house, transformers, transmission line, switchboard, piping, ditching, valves, etc.—Gannett, Seelye & Fleming, Engrs., Harrisburg.

S. D., Armour. 9 p.m., Aug. 20.
One 80,000-gal. steel water tank and 110-ft. tower, 1,906 ft. 4 to 10-in. cast iron water main, 2,550 ft. ¾-in. lead service pipe.—F. Felton, City Aud.

Can., Winnipeg. noon, Sept. 1.
Water level recorder to indicate at head office of water district in Winnipeg the water level in surge tank in St. Boniface—Water District Comm., 501 Tribune Bldg.

LIGHTING AND POWER.

Ecuador. Sept. 1.
Electric light and power plant.—File No. 119,670, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Sask., Saskatoon. Sept. 23.
Steam turbine, alternating current, generator, switch gear equipment, surface condenser and condenser auxiliaries.—C. J. Yorath, City Comr.

FIRE EQUIPMENT.

D. C., Washington. Aug. 26.
Three hose carts for Cape May, N. J.—Bureau Supplies & Accounts, Navy Dept.

Md., Cumberland. 9.30 a.m., Aug. 18.
One four-wheeled tractor to motorize aerial ladder truck.—T. A. K. Hummelshime, Cor. Police and Fire.

BRIDGES.

D. C., Washington. 2 p.m., Aug. 19.
Reconstructing portion of canal wall west of Aqueduct bridge.—Chf. Clk., Engr. Dept., 427 District Bldg.

Ga., Statesboro. 2 p.m., Aug. 19.
Seven bridges in Bulloch Co., involving 1,792.7 cu. yd. common excavation, 2,827.3 cu. yd. borrow excavation, 1,016.47 cu. yd. Class A concrete, 1,864 lin. ft. 14x14 reinforced concrete piles, 444 lin. ft. 10x10 reinforced concrete piles, 98,252 lbs. steel, 1,088.02 sq. yd. 12-in. carpet coat sand asphalt, 1,508.3 cu. yd. sand-clay surfacing, etc.—J. B. McCrary Co., Third Natl. Bank Bldg., Atlanta.

Ga., Thomasville. 4 p.m., Aug. 22.
Bridge over Ochlocknee River.—J. B. McCrary Co., Engrs., Atlanta.

Ga., Thomaston. Sept. 3.
Bridge over Flint River, two 120-ft. steel truss spans, 12-ft. roadway.—Comrs. Roads and Revenues, Upson Co.

Ga., Swainsboro. 2 p.m., Aug. 20.
Bridge in Emanuel Co. of reinforced concrete, involving 6,720.8 cu. yd. borrow, 932.97 cu. yd. concrete, 2,232 lin. ft. 14x14 reinforced concrete piles, 135 lin. ft. 10x10 reinforced concrete piles, 1,176.90 sq. yd. half-in. carpet-coat sand asphalt, etc.—J. B. McCrary Co., Engrs., Atlanta.

Ga., LaGrange. Aug. 26.
Two reinforced concrete bridges.—Garrett & Sleek, Bell Bldg., Montgomery, Ala., Proj. Engrs.

Ill., Quincy. Aug. 23.
Constructing bridges and culverts.—Co. Supt. Hwys., Adams Co.

Ill., Springfield. 10 a.m., Aug. 23.
Bridge in various locations in state.—State Hwy. Dept.

Ind., Anderson. 10 a.m., Aug. 26.
Four bridges on road in Adams twp.—E. T. Flahavin, Co. Aud.

Minn., Glencoe. Aug. 22.
Two reinforced concrete bridges, concrete slab spans.—F. D. Stocking, Co. Aud.

Mont., Great Falls. Aug. 25.
970-ft. concrete bridge, 42 ft. wide, and 12-ft. concrete bridge, 44 ft. wide, over Missouri River.—P. D. Pratt, State Hwy. Engr., Helena.

N. J., Trenton. 10.30 a.m., Aug. 20.
4 rein. concr. bridges in Camden Co.—A. L. Grover, Chief Clk., State Hwy. Comr.

O., Cincinnati. noon, Aug. 22.
Constructing concrete bridge.—Bd. Co. Comrs.

O., Painesville. 10 a.m., Aug. 25.
Constructing reinforced concrete bridge and approaches at Willoughby.—W. P. Brown, Consult. Engr., Hippodrome Bldg., Cleveland, O.

O., Canton. 9 a.m., Aug. 25.
Constructing concrete culvert.—W. C. Schick, Co. Clk.

O., Bryan. Aug. 18.
Bridge in Pulaski Twp., Williams Co.—C. R. Lowe, Co. Clk.

O., Akron. Aug. 21.
Bridge over Wolf Creek, Copley Twp., Summit Co.—L. M. Kauffman, Clk., Co. Comrs.

O., Chillicothe. Aug. 25.
Bridge in Ross Co.—W. S. Barrett, Co. Aud.

BIDS ASKED FOR

N. Y., New York. **Noon, Aug. 27.**
Repair and enlargement of sea wall near southern boundary of Sandy Hook reservation, N. J.—U. S. Engr. Office, Army Bldg., 39 Whitehall St.

N. Y., New York. **Noon, Aug. 29.**
Dredging in Newtown Creek, N. Y.—U. S. Engr. Office, Army Bldg., 39 Whitehall St.

N. Y., Buffalo. **11 a. m., Aug. 29.**
Dredging in outer harbor here.—U. S. Engr. Office, 540 Federal Bldg.

Pa., Philadelphia. **noon, Aug. 19.**
Repairing dike in Delaware River at Artificial Island.—U. S. Engr. Office.

O., Cincinnati. **noon, Aug. 22.**
Concrete mixer with capacity for not less than 7 cu. ft. mixed material and 10

cu. ft. loose, with power loader, gasoline engine, on trucks (price not to exceed \$1,000).—E. Von Bargen, City Pur. Agent.

O., Toledo. **noon, Sept. 3.**
Summit street extension and diversion of Swan Creek, including salvage work; 46,000 cu. yd. dry and 44,000 cu. yd. wet excav., extending 20-in. sewer 200 ft.; rein. concr. retaining wall, wood revetment, rein. concr. viaduct, involving 9,500 cu. yd. excav., 4,000 cu. yd. concr., 250 tons steel, 117,640 ft. lumber and 25,000 lin. ft. piles; one 40x80-ft. and one 80x80-ft. bascule bridge with substructures.—Comm. Engrg. & Constr., 229 Valentine Bldg.

Utah, Salt Lake City. **10 a. m., Aug. 18.**
Furnishing and laying 312,850 lin. ft.

drain tile, excavation and backfilling same length of trench, 35,000 cu. yds. excavation for open drains.—Caldwell & Richards, Engrs., 320 Vermont Bldg.

Va., Norfolk. **noon, Aug. 27.**
Dredging in waterway from Norfolk to sounds of North Carolina.—U. S. Engr. Office, Custom House.

B. C., Stewart. **noon, Aug. 20.**
Constructing wharf for Department of Public Wks., Ottawa.—R. C. Desrochers, Sec'y.

Ont., Ottawa. **Aug. 19.**
Building channel protection works on either side of new opening from Gulf of St. Lawrence into North Lake (Kings County).—E. Lafleur, Engr.

STREETS AND ROADS.

Ala., Montgomery.—Alabama senate adopted bill submitting amendment providing for issuance of \$25,000,000 good road bonds.

Ark., Forrest City.—Bids will be received shortly for gravel roads in St. Francis Co.; estimate, \$160,000. Address Co. Judge.

Ark., Pine Bluff.—Two road improvement districts are being organized in Lincoln Co. under the Alexander Road Law for building road from Star City to Cornersville, a distance of 10 1-2 miles and another from Star City to Cornersville, a distance of 19 1-2 miles. The two districts are being promoted by Co. Judge Reed of Lincoln county. It will probably take about a month and a half to complete preliminary arrangements. It is estimated that Relf's Bluff road will cost \$60,000 and road to Cornersville will cost \$100,000.

Cal., Byron.—Contra Costa has voted issuance of \$2,600,000 in bonds for improvement of highways.

Cal., Eagle Rock.—An election held Aug. 12 to vote on issuing street improvement bonds to amount of \$90,000.

Cal., Oroville.—Paving and sidewalks planned on number of streets. Address City Clk.

Fla., St. Augustine.—Plans are rapidly shaping for submission to voters of enlarge road and bridge building program for St. Johns Co. The plans include: Concrete bridges along entire Dixie Hwy. through St. Johns Co. Approximately 50 additional mi. of paved roads which will, when built, give St. Johns Co. more than 100 mi. of hard-surfaced roads. Two concrete bridges across to St. Augustine beaches, one across North River and one across Matanzas to Anastasia Island.

Ida., Boise.—Aug. 30 was selected by Co. Comrs. as date on which the \$1,000,000 Ada Co. road bond election will be held.

Ida., Meridian.—Citizens met to discuss question of forming a highway district embracing Meridian and Kuna.

Ill., Carlinville.—City proposes to pave three streets.

Ill., Springfield.—Issue of \$180,000 road bonds will be sold. Address Police Jury of Livingston Parish.

Ind., Indianapolis.—Ed. of Pub. Wks. made further progress in street improvement program when it adopted preliminary resolutions for resurfacing of 11 streets; the permanent improvement of seven streets and one alley; the grading and graveling of one street, and cement sidewalks for three streets.

Ind., Indianapolis.—The Bd. rescinded action on improvements of Ewing St., from 10th to 16th St., because, after bids were received, it was decided to make street 20 ft. wide, instead of 24. Resolutions for improvement of Boulevard Pl., from 16th to 21st Sts., and of Senate Ave., from 10th to 16th St., were ordered referred to Common Council because of valid remonstrances. Plans for following improvements were ordered: Permanent improvement of 28th St., from Illinois St. to Talbot Ave.; resurfacing of Illinois St. and improvement of Boulevard Pl.

Ind., Kingsley.—City Council is advertising for bids for construction of 46,000 sq. yds. of paving. It is desire of Coun-

cil to have 15,000 sq. yds. done this year, but the balance may be held over until next year.

La., Le Mars.—Plymouth county, Elec. Aug. 12 to vote \$250,000 road bonds. J. M. Hayee, Co. Aud.

La., Sioux City.—Paving of 12 blocks on East Side was ordered at special meeting of City Council. E. 2d St. will be paved and Rustin Ave. City Clk. Paul Wells was authorized to advertise for bids. Petitions for construction of sanitary sewer in W. 5th St. and for paving of 36th St., and Jones St. from 36th to 37th Sts., were referred to St. Comr. Malone.

La., Sioux City.—Issue of \$2,500,000 bonds voted in Woodbury Co. for concrete roads. Address E. E. Hosmer, Co. Aud.

Kan., Hutchinson.—Issue of \$900,000 road bonds sold. Address City Clk.

La., Thibodaux.—Bids will be received in Lafourche Parish on bond issue of \$145,000 for roads. C. J. Conlon, Clerk Police Jury.

Mass., Salem.—City has sold to F. Mosley & Co. \$177,000 of 4 1/2 per cent. pavement bonds maturing 1920 to 1929 inclusive.

Mich., Pontiac.—Concrete pavement to cost \$120,000 and extend through village of Milford is to be constructed.

Minn., Brainerd.—Crow Wing county will take bids in August for hard surfaced road south of Brainerd. C. W. Mahlum, County Auditor.

Minn., Duluth.—Proposition has been suggested that Michigan St. be elevated to level of Superior St.

Minn., Duluth.—See "Sewerage."

Minn., Duluth.—City contemplates construction of many sidewalks and street improvements: \$15,972 being appropriated for improving Fifty-fourth Ave. and \$22,766 for Twenty-second Ave.

Minn., St. James.—Road bonds of \$250,000 have been issued in Watonwan County.

Minn., Walker.—Issuance of road bonds to amount of \$410,000 has been authorized.

Miss., West Point.—Issue of \$70,000 road bonds will be sold. Address Co. Clk. of Clay Co.

Mo., Carrollton (Carroll Co.).—An election is proposed to vote road bonds to amount of \$1,100,000.

Mo., Carthage.—Election will be held Sept. 19 to vote road bonds in three townships aggregating \$700,000.

Mo., Edina.—Election will be held soon to vote road bonds to amount \$400,000.

Mo., Palmyra.—Election in Marion Co., Aug. 12, on \$1,500,000 road bonds. Address Co. Judge.

Mo., St. Louis.—Ed. of Pub. Service proposes to widen 12th St. and Washington Ave. Appropriation of \$250,000 is asked.

Mo., St. Louis.—City contemplates bond issue of \$22,000,000 for public purposes. Many streets are to be improved by construction of sidewalks, sewers, grading and paving.

Mo., Versailles.—An election will be held Aug. 26 to vote on issuing road bonds to amount of \$300,000.

Neb., Superior.—It is planned to expend \$75,000 for curbing, guttering and paving 20 blocks. Address L. L. Carpenter, City Clk.

N. J., Carlstadt.—Bids will be received some time in August by Borough Council for improvement of Hoboken Rd. in East Rutherford.

N. J., Hackensack.—The Freeholders have been requested to take over many roads. Twenty-one roads covering at least 50 miles may be added to present

system. The Freeholders will meet respective municipal bodies in connection with the enlarged county road program.

N. M., Roswell.—An election will be held Sept. 23 by Chaves Co. to vote on issuance of \$200,000 for improvement of roads.

N. Y., New York.—Queens Borough contemplates spending \$500,000 on public improvements, including much paving.

N. C., Asheville.—Asheville's building program will not be postponed. City Comrs. passed ordinance authorizing bond issue of \$160,000 to pave thoroughfares in West Asheville and in city proper. Bd. will probably borrow money in order to begin work at once.

N. C., Asheville.—Co. Comrs. of Buncombe Co. made out applications to State Hwy. Comr. for Federal-aid money amounting to over \$100,000 for road building to start in near future. Roads to be built with the money are Black Mountain and the west Asheville Rds., these two highways connecting Haywood and McDowell Cos.

N. C., Charlotte.—City Comrs. declared three new permanent improvements districts, each small in area. Central Hotel alley, running from Trade to 4th Sts., is one district, and this will be paved without unnecessary delay. E. 5th St. also will be paved and sidewalk laid on north side of the street. Amherst Pl. will be paved. Plans require laying of between 2,500 to 3,000 sq. ft. of paving.

N. C., Concord.—City is soon to spend many thousand dollars on civic improvement. Bd. of Aldermen ordered paved approximately 10,000 sq. yd. of sidewalks in Concord, 13,000 lin. ft. of sewerage, and promised that in near future a new municipal building would be erected just in the rear of present city hall.

N. C., Fayetteville.—City will spend \$150,000 for paving streets; \$6,000 will be spent for paving sidewalks on Benson St.

N. C., Nashville.—It is planned to expend \$250,000 for hard surfacing 10 mi. of road between this city and Rocky Mount. Address Co. Clk. of Nash Co.

O., Akron.—City votes Aug. 12 on road bonds of \$3,157,000.

O., Cincinnati.—Final resolutions were adopted by Co. Comrs. to improve that part of Cincinnati-Louisville Rd., Inter-county Hwy. 38, Sec. "D."

O., Cincinnati.—City passed ordinance providing for bond issue of \$16,000 for cost of paving McMillan St.; two other streets to be paved.

O., Circleville.—Market Rd. No. 19, through Fayette, Madison and Pickaway Cos., to be paved. Approved by State Hwy. Comrs.

O., Cleveland.—City Council made appropriations totaling \$54,150 for improvement of three streets; also \$12,000 to be spent for constructing drives and retaining wall between 89th and 90th Sts.

O., Conneaut.—Ashtabula Co. Comrs. will readvertise a five-mile stretch of Conneaut-Youngstown Rd. Also 10 mi. on Richmond-Pierpont Rd.

O., Delaware.—Delaware Co. Comrs. pass resolution to improve the following roads: Trenton-State-Home Road, Columbus & Sunbury rd.; Trenton-Porter, Infirmary rd., bituminous macadam to be used.

O., Elyria.—Paving of 2 1/4 mi. in Avon Twp. has been authorized; estimate, \$42,000.

O., Holgate.—Bids will soon be received for work on Pleasant, Ridgeville, Marion, Harrison, Bartlow and Flat Rock roads; estimate, \$159,000.

O., Lisbon.—The following work has been authorized: Calcutta-Frederick Rd.,

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\$7,000; Salem-Winona Rd., in Butler Twp.; East Liverpool-Cannons Mill-Lisbon Rd., Lisbon-Salineville Rd., \$18,000; \$75,000 bonds to be sold for Leetonia-Columbiana Rd. and Columbiana-New Waterford Rd.

O., New Philadelphia—Bids will soon be advertised for work on several roads in Goshen Twp.

O., Sandusky—Comrs. will readvertise building Townsend Rd.

O., Tiro—Surveyor Keller, of Crawford Co., has completed 14 new road surveys.

O., Woodlawn—Towns of Woodlawn and Wooddale have voted on the issuance of \$100,000 for permanent road improvements.

Okla., Tulsa—Comm. approved and referred to City Engr. petitions from property owners for paving East Lynn and Oak Lawn additions, West Brady, from Xenophon to Union, and 6th, from Troost to Xanthus. Petition for sanitary sewer for blocks 3 to 15 of Capitol Hill addition was referred to City Engr. and petition from property owners asking that Mountain View addition be admitted to city was referred to City Engr. and City Atty. for action.

Pa., Bellevue—Has authorized \$50,000 street improvement bonds.

Pa., Scranton—City Council plans the grading, paving and curbing of three streets.

S. C., Camden—It is planned to expend \$88,000 for improving about 14 mi. of road between here and Cassatt, Kershaw Co. Address Co. Clk.

S. C., Newberry—Grading, draining, surfacing, etc., planned on about 6.74 mi. of road between this city and Prosperity, Newberry Co.; estimate, \$36,000. Address Co. Clk.

S. C., Spartanburg—Sealed proposals will be received by T. J. Boyd, City Treasurer, until Aug. 21, for the purchase of \$200,000 street improvement bonds, dated Sept. 1, 1919.

Tenn., Alamo—Issue of \$160,000 bonds voted for hard-surfaced road in Crockett Co. Address Co. Judge.

Tenn., Bristol—Federal road project known as Bristol Rd., from Holston River through "Shad" and Mountain City to the North Carolina line, is to be constructed at a cost of \$278,000.

Tenn., Camden—Election will be held Sept. 10 to vote Benton Co. road bonds to amount of \$200,000.

Tenn., Chattanooga—Alton Park will improve streets and sewers at cost of \$150,000.

Tenn., Jackson—Mayor J. D. Johnson will receive sealed bids until Aug. 30 for following 5 per cent. semi-annual bonds: \$152,000 street and \$76,000 general improvement.

Tenn., Knoxville—Kingston Pike is to be rebuilt from city limits to London Co. line. Approximate cost, \$200,000.

Tenn., Knoxville—See "Sewerage."

Tenn., Rogersville—Bids will be received until Aug. 20 for purchase of bond issues of \$50,000 and \$15,000 for roads in Hawkins County.

Tex., Corsicana—Navarro Co. has been fortunate in securing Federal aid for good road improvement, \$235,000 being the sum appropriated on a basis of 50 per cent. of cost of construction of certain sections of highways.

Tex., Dallas—Bonds totaling \$2,300,000 were signed by Mayor Frank Wozencraft. The issues signed included \$1,250,000 street improvement issue, \$750,000 school and \$300,000 Park Bd. issue.

Tex., Emory—Attorney General approved \$250,000 Rains County special road bonds.

Tex., Kaufman—An issue of \$150,000 5 per cent. road district No. 8 bonds, dated July 1, was awarded First National Bank, St. Louis.

Tex., Kingsville—Work is soon to begin on construction of Kleberg Co. roads, for which bonds were voted several weeks ago. Co. Comrs. Court has employed Capt. Henry Porter as engineer for Co.

Tex., Mount Vernon—On Aug. 16 election will be held in Franklin Co. on \$500,000 good roads bond issue. This Co. was promised \$175,000 Federal aid on Jimm Hogg Hwy., which will go through from north to south, in case the \$500,000 bond issue carries.

Tex., Palo Pinto—Palo Pinto Co. is backing good roads movement. The road west of Mineral Wells, which has been badly cut up, will soon be in good condition. The city, county and state will furnish \$40,000 to put road in good condition. Federal Hwy. Dept. in Fort Worth is advising Co. on the road. Immediate work will start on this road.

Tex., Sulphur Springs—It was voted to ask for \$2,000,000 bond issue for perma-

nent road building. Lee J. Rountree, permanent chairman, was made vice-chairman for all precincts.

Tex., Vernon—Election has been called to be held Aug. 26 to vote on \$25,000 bonds. Of this amount \$15,000 will be used for street paving and \$10,000 for water and sewer extensions. City Comm. last month ordered the paving of 42 blocks.

Va., Bristol—Resolution was passed authorizing ordinance committee and city attorney to prepare ordinance to sell bond issue of \$100,000 for proposed street improvement work. It is likely that Russell, Lee, Spencer, Cumberland, Mary and Oak Sts. will be rebuilt or improved.

Va., Richmond—Recommendation of Council Finance Com. for appropriations of \$100,000 for improvement of streets, public utilities and equipment of Robert E. Lee school will be submitted to Com. Council. Appropriations are as follows: For completion of work on Chamberlayne Ave., \$45,000; for extension of 4th St., in South Richmond, \$16,000; for equipment of Robert E. Lee school, \$16,000; for the extension of gas mains, \$20,000.

Wash., Spokane—Official county bond vote carried. County will immediately advertise \$450,000 worth of bonds for sale.

W. Va., Birmingham—Ordinances calling for street improvements to cost more than \$20,000 were passed by City Commission. Improvements are to be made on 41st St., from Clairmont Ave. to 8th Ave., South, and to cost \$11,413. Contract was awarded H. N. Bowdry. Improvements are to be made on 17th St., Ensley, to cost \$9,900, approximately.

W. Va., Charleston—Malden Dist. in Kanawha Co. held special election Aug. 12 to vote bond issue of \$80,000 for improvement of main roads.

W. Va., Charleston—Kanawha Co. Comrs. have received petitions for bond issues of \$910,000, to be used on the following roads: Cabin Creek Rd., Paint Creek Rd., South Side Rd. and North Side Rd.

W. Va., Morgantown—Cameron District in Marshall will vote on issue of \$234,000 to improve all main highways in district.

W. Va., West Union—An election is proposed in McClellan District to vote road bonds to amount \$250,000.

Man., Dunrea—The Rural municipality of Riverside will spend \$84,500 for system of roads.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

***Ill., Peoria**—Contract for building Springfield cemetery road was let to the Peoria Paving Co. by Roads and Bridges Com. of Bd. of Supervisors. Ora Barnewolt and Dave Conigisky are heads of the company. Five bids were submitted as follows: Peoria Paving Co., \$11,302; A. Biehl, \$11,305.98; Keokuk Quarry & Const. Co., \$13,537.48; Canterbury Bros., \$14,991.90; McElwee & Rogy, \$16,669.70. Bids do not include cost of cement to be used in building the roads, as the cement is purchased by county.

Ind., Greenfield—Hancock Co. Comrs. let contracts for two roads in Buck Creek Twp., each two mi. long, to A. F. Hooton & Son and G. C. Winslow, of this city. Harper Rd. was let to the Hooton firm for \$14,243 and Sanford Rd. to Mr. Winslow for \$10,194.

***Ind., Huntington**—Six road contracts were let by County Comrs. The roads, the bidders and the amounts follow: George E. Wilhelm road, F. B. Fishbaugh, \$1,500; Joseph Hoover road, F. B. Sunderman, \$15,450; William H. Krieg road, F. B. Fishbaugh, \$13,680; Henry Heaston road, Charles McAfee, \$16,059; Bert Thorn road, P. B. Putman, \$8,990; and George Altman road, P. B. Putman, \$18,600.

Ind., Indianapolis—Bids received were as follows: Resurfacing Washington St., Indiana Asphalt Paving Co., Trinidad, \$4.95 a lin. ft. and oil asphalt \$3.82; Union Asphalt Const. Co., Trinidad \$4.92 and oil \$3.75; Premier Const. Co., Trinidad \$4.93 and oil \$3.54; resurfacing 16th St., Union Asphalt Const. Co., Trinidad \$4.51 and oil \$3.40; Premier Const. Co., Trinidad \$4.51 and oil \$3.40; Premier Const. Co., Trinidad \$4.51 and oil \$3.31; Indiana Asphalt Paving Co., Trinidad, \$4.67 and Texaco oil, \$3.46; Mansfield Engineering Co., which uses Mexican standard asphalt, \$3.85; resurfacing West St., Mansfield Engineering Co., \$5.16;

Union Asphalt Const. Co., Trinidad \$6.40, oil \$4.60; Premier Const. Co., Trinidad, \$6.23 and oil \$4.55, and American Const. Co., Trinidad \$6.35 and oil \$4.50.

***Ind., Indianapolis**—Contract for resurfacing New Jersey St. was awarded J. N. Morgan & Son for asphalt at \$5.97 a lin. ft. of property frontage and \$8.97 a ft. for one-half of street intersections, total of \$27,599.49.

Ind., Indianapolis—All bids received by State Hwy. Comm. for construction of main roads in eight Federal-aid districts were under estimates. The following road improvements were bid on: Elkhart Co., 6.35 mi., Reith-Riley Co., concrete, \$248,874.20; brick, \$360,989.86. No. 4, Putnam and Hendricks Cos., 8.12 mi., Marion Construction Co., concrete, \$437,872.30; Fred Cunningham, concrete, \$339,105.36; A. J. Yawger, concrete, \$353,824.84. 6, Vigo and Clay Cos., 7.37 mi., Joseph Hall & Co., concrete, \$313,716.20; Carpenter Construction Co., concrete, \$265,777.10; brick, \$346,040.10; William L. White, concrete, \$274,651.19. No. 8, Marion and Hamilton Cos., 5.76 mi., Morris & McMannara, concrete, \$205,973.95; American Construction Co., bituminous concrete, \$240,645.30; Edward S. Grant, concrete, \$211,444.04. No. 10, Marshall Co., 8.39 mi., W. J. Long, bituminous concrete, \$386,268.34; Becker-Enyart Co., concrete, \$274,519.97; brick, \$386,583.07; L. W. Seaman, concrete, \$288,421; brick, \$404,219.02; J. A. Sackey Co., concrete, \$286,647.40; brick, \$402,444.40; bituminous concrete, \$373,454.60. No. 11, St. Joseph and Elkhart Cos., 3.50 mi., Northern Construction Co., concrete, \$117,088.10; Andrews Asphalt Paving Co., bituminous concrete, \$153,378.86. No. 12, Jackson Co., 6.22 mi., A. J. Yawger Co., concrete, \$218,825.82; Mead Construction Co., concrete, \$222,960.54; bituminous concrete, \$259,818; Davis Construction Co., concrete, \$210,377.60; Laurence Jenkins, concrete, \$231,130.65. No. 13, Hancock Co., 8.85 mi., Premier Construction Co., bituminous concrete, \$344,161.75; C. M. Kirkpatrick, concrete, \$230,063.27.

***Ind., Indianapolis**—Contracts awarded Mansfield Engineering Co., using Mexican standard asphalt, were for following streets: Delaware St., resurfacing, \$5.31 a lin. ft. of property frontage, \$8.37 a ft. for one-half of street intersections, a total of \$12,924.99 (the low Trinidad bid was \$6.40 a lin. ft.); Central Ave., resurfacing, \$2.61 a lin. ft. of property frontage, \$3.88 a ft. for one-half of street intersections, total of \$21,506.51 (the low Trinidad bid was \$3.14 a lin. ft.); Capitol Ave., resurfacing, \$4.53 a lin. ft. for property frontage, \$7.30 a ft. for one-half of street intersections, total of \$19,422.77 (the low Trinidad bid was \$5.36 a ft.); 21st St., resurfacing, \$3.68 a lin. ft. of property frontage, \$5.95 a ft. for one-half of street intersections, total of \$18,499.73 (the low Trinidad bid was \$4.24 a ft.); New York St., resurfacing, \$3.87 a lin. ft. of property frontage, \$5.19 a ft. for one-half of street intersections, a total of \$9,802.50 (the low Trinidad bid was \$3.22 a ft.); and Madison Ave., resurfacing, \$5.73 a lin. ft. of property frontage, \$8.91 a ft. for one-half of street intersections, a total of \$8,653.42 (the low Trinidad bid was \$6.25 a ft.). J. N. Morgan & Son received the contract for resurfacing Ohio St. with Trinidad asphalt at \$8.15 a lin. ft. of property frontage, \$8.25 a ft. for one-half of street intersections, total of \$26,350.08. This firm was only bidder on asphalt for this work.

***Ind., Indianapolis**—The following companies were successful bidders, contracts having been awarded by Comm. Reith-Riley Construction Co., road in Elkhart Co., 6.35 mi., \$248,874.20; Fred Cunningham, road in Putnam and Hendricks Cos., 8.12 mi., \$339,095.36; Carpenter Construction Co., road in Vigo and Clay Cos., 7.37 mi., \$265,777.10; J. E. McNamara Construction Co., road in Marion and Hamilton Cos., 5.76 mi., \$205,973.95; Becker-Enyart Co., road in Marshall Co., 8.39 mi., \$274,419.97; Northern Construction Co., St. Joseph and Elkhart Cos., 3.50 mi., \$117,088.10; Davis Construction Co., road in Jackson Co., 6.22 mi., \$210,377.60, and V. M. Kirkpatrick, road in Hancock Co., 8.85 mi., \$230,063.27.

Ind., North Vernon—The Bd. of Co. Comrs. awarded contract for construction of the William Clerkin Pike, in Campbell Twp., to H. W. Miller, of this city. Bid was \$15,549.

***Ind., Rochester**—Contracts were let by Fulton Co. Comrs. on Kleppinger Rd. to Martin McHale, of Logansport, for \$15,390, and on the U. S. Kroft Rd. to Landis and Woolpert, of Akron, for \$21,200.

775. Both are Co. unit gravel roads and are located in Rochester and Henry Twp., respectively.

***Ind., Shelbyville**—Contracts for construction of 7 gravel roads in Shelby county were awarded by Shelby County Comrs., subject to approval of State Board of Tax Comrs., who must authorize the bond issues. The roads, the successful bidders and their bids follow: The Rhoades road in Marion Twp., Chas. E. Moberley of Shelbyville, \$13,983; the Yarling road, in Addison Twp., D. H. Fatout of Indianapolis, \$12,990; the Bowman road, in Van Buren Twp., Harvey Snider, of Fountaintown, \$13,618; the Boring road, in Van Buren Twp., Harvey Snider, \$7,243; the Cotton road, in Union Twp., Jasper Hester, \$15,950; the Hassler and Noe roads, both in Brandywine Twp., William F. Bolt, of Frankfort, \$6,888 and \$6,666.

***Ind., Wabash**—Wabash Co. Comrs. awarded contract for paving 2.46 mi. of Lafontaine Rd. to the Federal Asphalt and Paving Co., whose bid was \$104,444. The work is to be completed by fall.

***Ia., Iowa City**—City Council has received bids on paving of West Iowa avenue. All bids ran above \$4 a yard for brick paving. Coburn & Mattson of Marshalltown bid \$31,594 as a lump sum for concrete paving. A. Carlson of Marshalltown bid \$31,699.20 for concrete. William Horrabin of Iowa City bid \$38,906.59 for brick.

***Ia., Marshalltown**—With a bid of \$2,74½ for one-course concrete, \$6.55 for paving between street car tracks with vitrified brick blocks with asphalt filler, 60 cents per lin. ft. for curbing, 75 cents per cu. yd. for extra grading, and 3 cents per cu. yd. for 100 feet overhaul, City Council let contract for 34,600 sq. yds. of paving to A. Carlson, of this city. Carlson's bid was lowest of seven submitted.

***Ia., Muscatine**—Council awarded contract to Korneman & Smith for paving approximately three mi. of streets in Fair Oaks and on Lucas St., a main artery into city. Contract price was \$50,000.

***Mass., Boston**—Award just given Central Construction Co. for repairing bituminous pavement in any street not under guaranty. Contract is for \$65,450 for 35,000 sq. yds. of work, and increased cost is due to high cost of labor and materials. There was only one other bidder, Warren Bros., who would do the work for \$69,583.50.

***Mass., New Bedford**—Two bids for paving contracts were opened by Supt. of Streets Chas. F. Lawton. Five paving jobs are contemplated aggregating about 11,622 sq. yds. Bids were as follows: Simpson Bros. Co., wood block, \$4.75 a sq. yd.; Hassam block, \$3.85 a yd.; Warren Bros. Co., endureite, \$1.99 a sq. yd.

***Mass., West Springfield**—Middlesex Construction Co. was awarded contract for new sewer. Town has appropriated \$20,000 for this work and Middlesex Construction Co.'s bid was \$18,363. The New England Construction Co. was near-est competing, with a bid a few hundred dollars higher. Two other contracting firms exceeded this figure and were not considered.

***Minn., Duluth**—Northwest Trust Co. of St. Paul outbid five other competitors for \$144,000 block of county drainage bonds which county has offered for sale. The bonds are for purpose of financing County Ditch No. 6.

***Mo., Alton**—Board of Public Improvements awarded contract to Stafford & Miller for paving of West College avenue. The bid was \$55,000, which was \$1,100 under the estimate. Under the contract paving is to be completed within 75 working days.

***Neb., Laurel**—Contract for 20,000 yds. of paving, to cost approximately \$82,000, was let by Bd. of Trustees to Western States Construction Co., of Omaha, for \$4.10 a yd. Vitrified brick block will be used, and contract calls for the completion of the work this year.

***N. J., Hackensack**—Number of contracts awarded, including the River Road contract in Garfield, to John T. Harrop Co., for \$40,000.

***N. J., New Brunswick**—Contract for paving Amboy avenue, Metuchen, was awarded to M. Irving Demarest of Seawaren by Middlesex Board of Freeholders, but the award is subject to approval of Metuchen Borough Council, as borough will pay half the cost of the work. Road is of Warrenite with concrete base. Mr. Demarest was low man in the bidding, his offer being \$59,833.21. Six bids were received, as follows: Andrew Keyes of Woodbridge, \$60,655.05;

George Gundrum of South Amboy, \$60,423.25; T. R. Riddle of New Brunswick, \$64,248.35; East Jersey Bridge Company of Perth Amboy, \$67,494.26; Liddle and Pfeiffer of Perth Amboy, \$65,662.66.

***N. J., West Orange**—The following bids received for improvement of Lakeside avenue. Rd. to be 36 feet wide.

American Utilities Co., 2140 lin. ft. .92, 20 lin. ft. curved concr. curb, \$1.15; 132 lin. ft. header curb, \$1.00; 3 Bluestone mon., \$20.00; 9 catch basins, \$100.00; 600 lin. ft 18 inch tile pipe, \$3.70; 4,400 sq. yd. con. pot., \$3.35; total, \$20,043.80. F. Connova, \$66; 20 lin. ft. curved concr. curb, \$1.20; 132 lin. ft. header curb, \$1.40; 3 bluestone mon., \$10.00; 9 catch basins, \$70.00; 600 lin. ft. 18 inch tile pipe, \$2.25; 4,400 sq. yds. con. pot., \$3.80; total, \$20,351.20. Osborne Marsellis Co., 2140 lin. ft., \$80; 20 lin. ft. curved concr. curb, \$1.00; 132 lin. ft. header curb, \$.90; 3 Bluestone mon., \$10.00; 9 catch basins, \$97.50; 600 lin. ft 18 inch tile pipe, \$2.40; 4,400 sq. yds. con. pot., \$3.69; total, \$20,433.30. Contract awarded, American Utilities Co.

***N. Y., Albany**—Proposals for improvement of following highway were received by State Comm. of Hwys.:

Road No. 1501, Chestertown-Hague, Pt. 4, Warren Co., 4.59 mi. (engineer's estimate, \$141,960.70)—F. W. Hamilton, Rochester, N. Y., \$141,248.50; E. J. Anderson & Co., Albany, N. Y., \$141,822.01.

The following proposals were also received for completion of highways: Road No. 1450-A, Castle Creek-Whitney Point, Broome Co., 6.93 mi. (engineer's estimate, \$256,702)—No proposals received.

Road No. 1451, Stella-New Ireland, Broome Co., 4.70 mi. (engineer's estimate, \$68,390.60)—No proposals received.

Road No. 1252, Santa Clara-Lake Macham, Franklin Co., 11.41 mi. (engineer's estimate, \$121,326.41)—M. J. Bruce & Co., Tupper Lake, Pt. 2, \$121,239.26.

Road No. 1402-A, Alabama-Batavia, Pt. 2, Genesee Co., 2.62 mi. (engineer's estimate, \$55,911.55)—Thomas P. Murray, Leroy, N. Y., \$51,355.05; Geo. W. Chambers, Rochester, N. Y., \$55,776.05.

Road No. 1403, Alabama-Batavia, Pt. 1, Genesee Co., 7.49 mi. (engineer's estimate, \$109,092.88)—Wing & Munger, Holley, N. Y., \$103,963.58; A. J. Rockwood, Rochester, N. Y., \$109,021.34.

Road No. 1421, Center Berlin-Petersburg, Rensselaer Co., 7.20 mi. (engineer's estimate, \$83,676.35)—No proposals received.

Road No. 1425-A, Melrose-Schaghticoke Hill, Rensselaer Co., 2.97 mi. (engineer's estimate, \$32,330.25)—John A. Jova, Inc., Roseton, N. Y., \$31,506.20; H. A. Schupp, Inc., Albany, N. Y., \$32,271.55.

Road No. 1388, De Peyster-Ogdensburg, St. Lawrence Co., 11.16 mi. (engineer's estimate, \$77,937.40)—Spellman-Oliver Co., Chateaugay, N. Y., \$95,363.37.

Road No. 1389, Gouverneur-Edwards, Pt. 2, St. Lawrence Co., 4.60 mi. (engineer's estimate, \$155,640.60)—No proposals received.

Road No. 1228-A, Chestertown-Hague, Pt. 3, Warren Co., 5.13 mi. (engineer's estimate, \$84,976.35)—No proposals received.

Road No. 1349-A, Varysburg-Warsaw, Pt. 2, Wyoming Co., 4.73 mi. (engineer's estimate, \$54,411)—Ansel A. Howard, Fairport, N. Y., \$48,816; Greenfield Cons. Co., Hornell, N. Y., \$52,161; The F. J. Mumm Contg. Co., Inc., Buffalo, N. Y., \$54,030.

***O., Cleveland**—Bd. of Control approves two contracts with the Cleveland Trinidad Paving Co. for grading, draining and paving Ludlow Rd. and Ashwood Rd., at \$27,500 and \$33,000, respectively.

***Okla., Tulsa**—City awarded paving contract. Total amount involved was \$33,428.54, and contractor, F. P. McCormick of Parker-Washington Company. More than 69,000 yards of paving are included and while agreed price is \$2.85 per square yard, the work will include all grading, curbing, guttering, drainage, etc., which will send gross cost up to \$5.40 per square yard.

***Pa., Harrisburg**—The following bids received Aug. 5:

Beaver Co., Pulaski and Daugherty Twp., Applications Nos. 24 and 455, 6,788 ft. one-course reinforced concrete—S. B. Markley, 299 Adams St., Rochester, Pa., \$65,037.70; R. D. Thomas & Co., 6 Boundary St., Pittsburgh, Pa., \$74,319.50.

Bedford Co., Woodbury Boro., Route No. 286, 2,414 ft. one-course reinforced concrete—Detwiler & Detwiler, New Enterprise, Pa., \$22,239.15.

Cambria Co., Croyle Twp., Route No. 276, 6,634 ft. one-course reinforced con-

crete and hillside vitrified brick—Croyle Twp. Supvrs. of Cambria, R. D. No. 2, Wilmore, Pa., \$127,217; Stephen Haddon, Secy., Portage Concrete Const. Co., Portage, Pa., \$141,120.

Centre Co., Rush Twp., Route No. 57, 12,355 ft. either one-course reinforced concrete or bituminous surface course on concrete foundation—No bids.

Clearfield Co., Lawrence and Pike Twp., Route No. 59, 17,977 ft. one-course reinforced concrete—Dowler & Anderson, Clearfield, Pa., \$195,584.80; John Boyce, Clearfield, Pa., \$199,498.50.

Clearfield Co., Brady Twp., Route No. 59, 8,118 ft. one-course reinforced concrete and hillside vitrified brick—Geo. I. Thompson & Co., Clearfield, Pa., \$73,301.90; Geo. Minns, Jr., 601 1st St., Du Bois, Pa., \$68,179.

Clearfield Co., Chester Hill Boro., Route No. 57, 4,333 ft. one-course reinforced concrete—Gifford & Pritchard, Phillipsburg, Pa., \$47,672.50; Geo. I. Thompson & Co., Clearfield, Pa., \$42,886.55.

Clearfield Co., Sandy Twp., Route No. 60, 13,027 ft. one-course reinforced concrete and hillside vitrified brick—Dale Engineering Co., Inc., 23 Mann Bldg., Utica, N. Y., \$136,990.90.

Erie Co., Northeast Twp., Route No. 87, 18,940 ft. either bituminous surface course on concrete foundation or one-course reinforced concrete—Griff Construction Co., 1117 State St., Erie, Pa., \$137,611.55.

Fayette Co., Dunbar Twp., Route No. 247, 5,950 ft. one-course reinforced concrete and hillside vitrified brick—Geo. S. White Co., Jenkins Arcade, Pittsburgh, Pa., \$65,403.30; R. D. Thomas & Co., 6 Boundary St., Pittsburgh, Pa., \$65,659.30.

Indiana Co., Indiana Boro., Routes Nos. 54, 63 and 67, 8,188 ft. one-course reinforced concrete—McCrary Bros. Co., 308 6th St., Braddock, Pa., \$84,031; M. Bennett & Sons, Indiana, Pa., \$73,958.50.

Indiana Co., Blairsville Boro., Application No. 694, 3,812 ft. one-course reinforced concrete—No bids.

Lackawanna Co., Elmhurst Boro., Route No. 168, 7,538 ft. bituminous surface on concrete foundation—O'Brien, Rees & Ruthven, 212 Carter Bldg., Scranton, Pa. (Class B), \$63,109.40; H. B. Sproul Const. Co., Inc., 218 Adams Ave., Scranton, Pa. (Class B), \$56,507.20; The Holt Lumber Co., 61 N. Main St., Carbondale, Pa. (Class E), \$59,435.00.

Lycoming Co., Muncy Creek and Wolf Twp., Muncy and Hughesville Boro., Route No. 9, 24,266 ft. either bituminous surface course on concrete foundation or one-course reinforced concrete—Winston & Co., 240 Fair St., Kingston, N. Y., \$198,041.88.

Lycoming Co., Piatt and Porter Twp., and Jersey Shore Boro., Route No. 23, either bituminous surface course on concrete foundation or one-course reinforced concrete—W. J. Gephart, 2033 Fifth Ave., Pittsburgh, Pa., \$126,271.98; Winston & Co., 240 Fair St., Kingston, N. Y., \$162,862.26.

Northampton Co., Plainfield Twp., Route No. 166, 29,182 ft. one-course reinforced concrete—E. P. Arbogast, 1 N. 7th St., Stroudsburg, Pa., \$217,812; R. S. Rathbun Cont. Co., 409 Vine St., Bethlehem, Pa., \$255,118.34.

Perry and Dauphin Cos., Buffalo and North Buffalo Boro., and Watts and Reed Twp., Route No. 195, 41,753 ft. either bituminous surface course on concrete foundation or one-course reinforced concrete—Winston & Co., 240 Fair St., Kingston, N. Y., \$439,676.22.

Schuylkill Co., New Castle, Blythe, Ryan and West Mahoning Twp., Route No. 161, 22,435 ft. one-course reinforced concrete—Edw. J. Corcoran, Plains, Pa., \$325,120.06.

Snyder and Juniata Cos., Susquehanna and Chapman Twp., Routes Nos. 195 and 229, 25,737 ft. either bituminous surface course on concrete foundation or one-course reinforced concrete—R. C. Fiss, Shamokin Dam, Pa., \$267,072.26.

Venango Co., Sugar Creek Twp., Route No. 91, 14,000 ft. one-course reinforced concrete—C. F. Hamilton, Inc., 423 Trust Co. Bldg., Franklin, Pa., \$131,697.98; Ritchey, Cramer & Snow, Franklin, Pa., \$132,553.20.

Westmoreland Co., Derry Twp., Route No. 68, 32,047 ft. one-course reinforced concrete and hillside vitrified brick—McCrary Bros. Co., 308 6th St., Braddock, Pa., \$389,580.43; Booth & Flink, Ltd., 1942 Forbes St., Pittsburgh, Pa., \$394,336.05.

***Rhode Island**—Contract for reconstructing Boston Post road at Westerly and Charlestown has been awarded to Amos D. Bridges Sons, Inc., of Hazardsville, Conn., by State Road Board for \$104,416.50. Federal aid fund will

apply to this work, Government paying half the expenses. The 5-mile stretch of road at place in question will be resurfaced with bituminous concrete.

***Utah, Logan**—Work will begin at once on betterment of road in Logan canyon, the Christensen Constn. Co. of Salt Lake having been awarded contract amounting to \$120,000. Forty miles of highway through the canyon will be repaired and sharp curves and dangerous places eliminated.

***Wash., Everett**—C. L. LePlant, of Sedro Woolley, has been awarded contract for paving Section 3 of Clear Lake Rd. on bid of \$124,089. Gran & Ervig, of Everett, at \$56,077, are low bidders for Section 1, while the Skagit Construction Co., of Mt. Vernon, are low at \$25,354 for Section 2. This bid was rejected and new figures will be opened Aug. 12.

***Wash., Seattle**—Highway surfacing contracts awarded this season include the following:

Auburn-Enumclaw gap, two miles; T. M. Morgan, Everett, contractor, \$59,857. Kent-Auburn road, 4.5 miles; Goetz & Brennan, contractors, \$117,500.

Seattle-Renton gap, 1.3 miles; Seaboard Construction Co., contractors, \$34,725.

Renton-May Valley Road, 6.4 miles; Kaiser Paving Co., \$181,174. (Federal aid).

Houghton-Medina-Bellevue gap, 1.2 mi. J. L. Smith, contractor, \$20,450.

J. B. MacDougal Road Extension, D. L. No. 1, 1.9 miles; Seaboard Construction Co., \$47,904.

To above list will be added the Sylvester Road, D. L. No. 2, for which bids will be opened by Board of King County Comrs., involving the paving of 3.15 mi. of highway in vicinity of Three Tree Point at cost of \$81,000.

***Wash., Tacoma**—Six bids submitted to Bd. of Co. Comrs. for paving two units of the \$2,500,000 bond issue were rejected because the amounts exceeded estimate by Co. Engr. E. A. White. The paving of Caligostoga Ave. will be done by Co. on force account, and Milton Ave. will be held over until next spring, the Comr. said. Estimates for a mi. of paved road on each unit totaled \$21,600 each. The Independent Asphalt Paving Co. bid \$30,366.60 for work on Calistoga Ave. for one-course concrete paving; T. M. Morgan bid \$29,440.64 and Joseph Warter bid \$28,207.90. Bids on Milton Ave. highway were: Independent Asphalt Paving Co., \$21,913.20; Kaiser Paving Co., \$24,687.35, and T. M. Morgan, \$26,825.84. Bids on concrete, which were estimated at \$2 a yd. in the election estimates, ran from \$2.23 bid by Joseph Warter to \$2.59, bid by the Kaiser Paving Co.

***Wis., Milwaukee**—Contracts have been let by Dept. of Pub. Wks. to Badger Construction Co. for paving with asphalt Becher St., Beulah Ave., Fernwood Ave., Locust St. from 33d to 35th Sts., and 23d St. The F. P. Caughlin Co. will pave Woodstock Pl. with asphalt, and Weiher & Sons will pave Becher St. with sand-stone blocks.

SEWERAGE AND SANITATION

Conn., Stamford—Council has recommended that Board of Finance order bond issue of \$225,000 for constructing sewage disposal plant. F. S. Wardell, Chmn. of Sanitation Com.

Conn., West Haven—Town has authorized Bd. of Selectmen to spend \$55,000 for sewer improvements. Alexander E. Cahn, Town Engr.

Cal., Cartersville—Until Aug. 20, by P. C. Flemlister, Mayor, and Bd. Aldermen, at office of City Clk., building 16 mi. 8-15 in. sanitary sewers, with necessary apertures.

Cal., Jessup—S. E. Cohen, Mayor, informs citizens that election will be held Aug. 23 to vote on issuing \$30,000 5% sewerage system bonds.

Ida., Buhl—City plans to install vitrified or cement sewers in Dist. Nos. 3 and 4. About \$87,000. G. B. Brazeau, Clk.

Ill., Rock Island—City Council passed ordinance to build storm drain sewers in 46th st. and 16th av. dist. About \$75,000. W. Treichler, City Engr.

Ind., Des Moines—The new sewers, one to cost \$212,000, the other \$22,068, were approved by City Council. First will be 19.8 mi. in length and will serve the people of Northeast Des Moines. The second, little over two mi. long, will serve the Waveland Park Dist.

Ind., Orange—Has voted \$200,000 sewer bonds.

Ind., Osage—City voted sewer bonds to amount of \$200,000.

Ind., Sioux City—Resolutions ordering construction of 75 blocks of eight and 10-inch sewer in Highland, Riverview Davis and Hornick additions, estimated cost of which will be \$25,000, were adopted by city council. City Clerk Paul Wells was authorized to advertise at once for bids.

Ind., Waterloo—City Council passes resolution directing that sewers be constructed in twelve streets.

Kan., Emporia—Plans are being made for new sanitary sewer system to be constructed this fall; cost, \$50,000.

Mich., Detroit—Storm sewer system, to cost \$1,325,000, is to be constructed. Comr. George Engel.

Minn., Adrian—Village having survey made by Druar & Smith, engrs., Globe Bldg., St. Paul, for sewerage system and sewage disposal tank. About \$40,000. M. E. Corrigan, Clk.

Minn., Duluth—City Council passes ordinance providing bond issue of \$400,000 for construction and repair of city sewers, also for paving street intersections.

Minn., Duluth—Bids on \$144,000 block of drainage bonds for Co. Ditch No. 6 opened by Co. Bd. at August meeting.

Minn., Foley—Ready for bids soon for sewers and waterworks. Engrs., Chute & Bradley, St. Cloud, Minn., 60,000-gal. steel tank; pump, 1,000-gal. per minute motor, \$40,000. Henry Bettendorf, Vil. Aud.

Minn., Lamberton—Village having plan prepared by Druar & Smith, engrs., Globe Bldg., St. Paul, for new sewers. About \$30,000. F. A. Biersdorf, Clk.

Minn., Madella—Will ask bids about Aug. 1 for storm sewers. Bond issue carried for \$80,000. Engrs., Bradley Engrg. Co., St. Paul, Minn. W. W. Cole, City Clk.

Minn., St. Paul—\$250,000 sewer bonds and \$50,000 hospital bonds have been sold.

Minn., Stillwater—Owing to the high estimate placed on construction of trunk sewer here by Twin City construction firms, the city of Stillwater will do the construction work under supervision of City Engr. J. A. D. Abercrombie, who will employ day labor. The contractor's bids called for 44 per cent. more than original estimate of \$22,500.

Neb., Lincoln—City Comrs. are considering plans for bond issue of \$65,000 for sewers.

Neb., Syracuse—Plans are being drawn for sewer system. Address Pres. of Village Board.

N. Y., Brooklyn—Board of Estimate will soon pass upon plans for Woodside trunk sewer, the way for which has been opened by acquisition of title to streets in North Woodside district through which this trunk sewer will extend. The sewer will extend right through heart of the Jackson Heights, Woodside and Winfield districts and will drain important district between Long Island City and district now drained by the Corona trunk sewer. Approximate cost \$4,000,000.

N. Y., Cohoes—Sewer extensions are advised by Bd. of Health. Address the Chairman.

N. Y., Poughkeepsie—Sewer extension is planned. Cost to be \$35,500. Address Mayor Butts.

O., Bellefontaine—See "Water Supply."

O., Piqua—Sanitary sewer on Young street and storm sewers on eight streets.

Okl., El Reno—City having plans prepared enlarging sewers and building Imhoff sewerage disposal plant. About \$95,000. H. G. Powell, Box 204, Engr.

Okl., Tulsa—See "Streets and Roads."

Ore., Portland—City Council plans to build many sewers; total estimate, \$61,910. O. Laurgaard, City Engr.

Pa., Scranton—City council pass ordinance for construction of sewers in five wards of the city.

S. D., Elk Point—Election will be held Sept. 1 to vote on issuance of bonds for building sewerage system.

S. D., Menno—Voted Aug. 1 on \$35,000 sewer bonds.

Tenn., Knoxville—City Treas. Robert William will receive sealed bids until Aug. 19 for following bonds: \$100,000 5 per cent. semi-annual sewer; \$97,000 6 per cent. semi-annual and \$47,296 city improvement and \$94,593 5 per cent. semi-annual street. Certified check for 2 per cent. required.

Tex., Vernon—See "Streets and Roads."

W. Va., Charleston—City will vote Aug. 20, on bond issue of \$1,000,000,

which includes cost of sewer extension for which plans are already drawn.

Wis., Sheboygan—City plans to excavate and lay 1.18 mi. sewers in Franklin st., from Washington ct. to Wisconsin av., involving 7,000 ft. 8-10 in. vitr. pipe. Cost between \$11,000 and \$12,000. C. U. Boley, City Engr.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicated Contracts Awarded.)

N. Y., Plattsburgh—Bids were opened at Chateaugay for trenching and laying of one mi. of sewer in that village. The following were the bids submitted: A. Perrotta, Burlington, \$12,000; Brown & Downing, Plattsburgh, \$11,971; Alfred Pennington, Plattsburgh, \$9,500.

WATER SUPPLY

Ariz., Phoenix—City has voted \$1,315,000 to secure gravity water supply from Verde River. Hiram Phillips, St. Louis, Cons. Engr.

Ark., Pine Bluff—Two additional reservoirs for Pine Bluff Co. are to be constructed, according to announcement made by H. C. Couch, Pres. of Pine Bluff Co.

Cal., Pasadena—S. B. Morris, Chief Engr., City Water Dept., advocates building distributing system in San Rafael Heights; cost, \$100,000; reservoir, \$17,000, and installation of booster pump.

Conn., East Hartford—Plans for additional water supply at Colebrook are ready and bids will be asked soon. President King, Bd. of Comrs.

Conn., New London—Officials are considering best means to adopt for increase of permanent water supply. Large expenditure will be necessary.

Ill., Decatur—Total of \$416,546 is provided in annual appropriation ordinance approved by City Comrs. \$307,778 is for general purposes that include appropriations made for construction work on new impounding dam. The allotment for that work is \$79,000.

Ida., Preston—City election Aug. 11 to vote on \$35,000 bonds to improve and extend water system. W. Chatterton, City Clk.

Ind., South Bend—South Bend is to be bonded for quarter of a million dollars. The money will be used in laying at least 20 mi. of water mains in various parts of city.

Ind., Warsaw—Indiana Public Service Comn. issued order which settles definitely the water problem for Warsaw. The order provides for the sinking of wells in a gravel pit near Winona Lake and making that the source of water supply for both Warsaw and Winona. Estimated cost of pumping stations, wells, reservoir and mains is \$103,000.

Ind., Farragut—Carried at election \$25,000 waterworks bonds.

La., Bossier—Issue of \$30,000 5 per cent. waterworks bonds was awarded Sidney Spitzer & Co., Toledo.

La., De Ridder—Election will be held Aug. 19 to vote on 30-year water and light bonds to amount \$100,000.

Md., Suburban Sanitary District—Messrs. A. B. Leach & Co., of New York, and Moorhead & Elmore, of Washington, jointly, were successful bidders for 5 per cent. 30-50-yr. (optional) water and sewer series B bonds to amount of \$750,000.

Mass., North Adams—Special survey being made to decide water needs of the manufacturers, with view to making necessary improvements. Address City Council Clerk.

Mass., Worcester—City has been asked to lay mains to Grafton Hospital, distance of nearly five miles. An enabling act from Legislature will be necessary. Address Water Comr. Geo. W. Batchelder.

Mich., Detroit—City Water Board has asked Council for appropriation of \$400,000 for filtration plant. Theo. C. Leisen, Engr.

Mich., Port Huron—City having plans and estimates prepared furnishing and installing 6,000 water meters in water system. About \$50,000. E. R. Whitmore, City Engr.

Mich., Palatka—The issue of \$50,000 5½ per cent. 12-yr. waterworks bonds was awarded Bank of Stambaugh at par.

Mich., St. Clair Beach (St. Clair P. O.)—Village having plans prepared by R. A.



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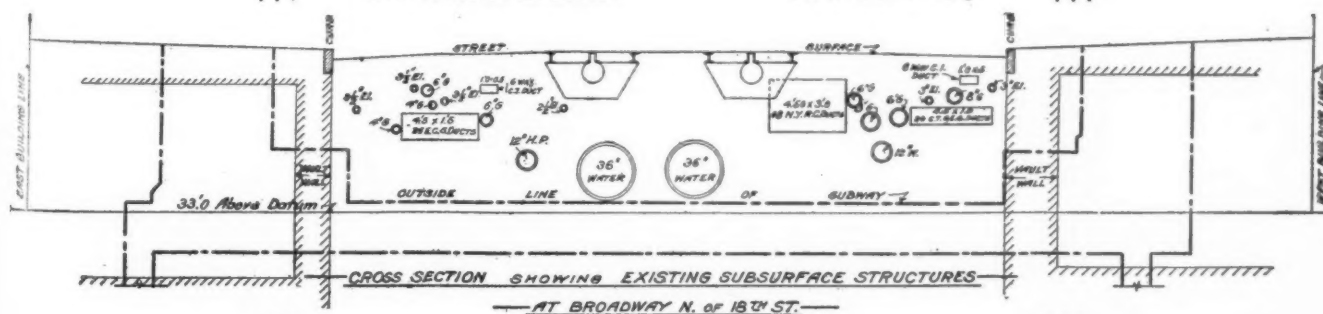
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Murdock, engr., 706 Free Press Bldg., Detroit, building system of watermain involving 7,000 ft. 4-6 in. water pipe, 12 hydrants, valves, etc. About \$10,000.

Minn., Foley—City having plans prepared by Chute & Bradley, engr., St. Cloud, for waterworks and sewers to include 60,000 gal. steel tank pump, 1,000 gal. per minute motor. About \$40,000.

Mont., Hardin—Sold by Town Council, \$50,000 water bonds for extension of water system.

Mont., Judith Gap—City plans to build waterworks system, including 6 in. mains. About \$15,000. Gerharz-Jacqueth Co., 514 1st Natl. Bank Bldg., Engrs.

Neb., Rushville—Has voted \$20,000 5% water bonds.

N. J., Perth Amboy—Will receive bids until Aug. 15 for \$50,000 4% per cent. semi-annual water bonds. Certified check for 2 per cent. is required.

N. J., South Amboy—Has authorized \$225,000 water bonds, dated Aug. 1, 1919.

N. Y., Malone—Messrs. Geo. B. Gibbons & Co., of New York, were successful bidders for the 5 per cent. annual 1-20-yr. water bonds to amount of \$30,000.

N. C., Enfield—Will shortly vote on \$85,000 not exceeding 6% 30-year water and sewer bonds.

N. C., Franklinton—Town voted \$50,000 bond issue for water system. Address City Clerk.

N. D., Dodge—Bond issue for water works to be voted on.

O., Ashland—Bids received on filtration plant were above \$25,000, and will be re-advertised.

O., Bellefontaine—Bids will soon be advertised for water works improvements costing \$100,000; also sewer, to be constructed at cost of \$12,000.

O., Carrollton—City retained W. J. Sherman, engr., 613 Nasby Bldg., Toledo, to prepare plans and estimates for water supply system.

O., Madison—City retained W. J. Sherman, engr., 613 Nasby Bldg., Toledo, to prepare plans for new water supply system, electric light and power plant.

O., Massillon—Dr. Benj. Groff heads syndicate to construct dam and make artificial lake at Comet, Summit Co., dam 30 ft. high, lake covers 30 acres.

O., Newport—Chris Ebert, Comr. of Newport waterworks, announced that city officials are having estimates made of cost of new pump at waterworks on Ohio River, east of Dayton, and for building new sedimentation system at Ft. Thomas reservoir. Officials have decided to submit matter to a vote at fall election. Cost of improvements will be \$250,000.

O., Oxford—Village plans to improve waterworks, plans include new electric pumping equipment, new service mains, etc. About \$35,000.

O., Toledo—City having plans prepared building 22 filters, 1,000,000 gal. capacity daily, 20x50x500 ft. settling basin, 11-250,000 gal. capacity, and several miles 30, 32 and 40 in. c. i. mains. Bonds for \$550,000 voted for project. H. C. McClure, City Engr.

O., Zanesville—Council is considering laying a 12-in. main in section that now has only a 4-in. Address Service Director.

Okla., Berry—Water and light plant is proposed at estimated cost of \$100,000.

Okla., Mounds—Improvements to water system are to be made at an estimated cost of \$33,000. Thos. L. Green, Engr., Miami, Okla.

Okla., Okmulgee—Issuance of water bonds to amount \$200,000 has been approved.

Okla., Tar River—Construction of water works system to cost about \$120,000 is under consideration. Address clerk of council.

Okla., Tulsa—\$5,000,000 bond issue carried in recent election and new water supply is now assured. Address the Mayor.

Pa., Pittsburgh—City will ask bids on bonds of \$1,020,000 to be spent on city water supply.

S. D., Iroquois—See "Sewerage."

Tex., Breckenridge—It is announced that plans are forming for almost immediate commencement of actual construction of dam and clearing the reservoir site recently donated to city. This project will represent investment of about \$200,000. Estimated capacity will be

200,000,000 to 300,000,000 gallons annually, which will be stored from flood waters and later filtered and piped into the mains.

Tex., Cisco—At meeting of City Comn. the services of Henry Exall Elrod Co., consulting engineers, of Dallas, were retained to prepare designs for large concrete dam to impound a supply of water adequate for a city of 50,000 inhabitants. The engineers will also undertake completion of city's extensive paving program and rush it to early completion.

Tex., Fort Worth—See "Streets and Roads."

Tex., San Angelo—See "Lighting and Power."

Utah, Orem (P. O. Prono)—City voted to issue bonds of \$110,000 for new water system.

Utah, Salt Lake City—Plans for new water conduit to be built along high line from Parley's Canyon to mouth of Emigration Canyon were approved by City Comrs. and bids for construction work will be called within few days. Cost will amount to \$175,000 for the conduit and \$100,000 for pressure lines connecting with city water mains.

Wash., Reardan—Waterworks system to cost about \$40,000 is to be constructed. C. F. Udhen, Engr.

Wash., Seattle—Detailed specifications and plans for construction of water works at Swan Lake reservoir, were presented to Bd. of Public Works by City Engr., A. H. Dimock.

Wyo., Rawlins—Special election Aug. 5 to vote on waterworks franchise. Owner, City. Belle Ryan, City Clk.

Eng., Manchester—House of Commons Select Com. has sanctioned new water supply scheme for this city; expected to cost \$50,000,000.

Ont., Cochrane—Town having plans prepared extending waterworks system. Bonds for \$25,000 voted for project. E. Casewell, Cochrane, Engr.

Ont., Windsor—City had plans prepared by F. W. Thorold, Engr., Toronto, installing pumping station and filtration plant for cities bordering on Windsor. About \$100,000.

LIGHTING AND POWER

Cal., Avalon—Election will soon be held on \$88,000 bond issue for light and water plant construction.

Ind., Elkhart—Has voted \$60,000 light extension bonds.

Ind., Indianapolis—Pub. Serv. Comn. authorized Northern Indiana Gas and Electric Co. to issue \$1,067,000 ten-year notes for purpose of raising money for improvements to its northern Indiana properties.

Kan., Hanover—Power dam is to be built on Little Blue River here, to cost \$150,000. A new flour mill will probably be built and city electric light and water works will also use the power besides furnishing power to outside towns.

N. C., Marshville—Electric light bonds of \$30,000 have been sold.

N. C., Wilson—Messrs. Hambleton & Co., of Baltimore were successful bidders for electric light bonds to amount \$60,000.

N. Y., New York—C. Grand Pierre, West Indian trade expert for F. C. Luthi & Co., export merchants, 277 Broadway, N. Y., leaves about Aug. 22 for trip to the Lesser Anties and Haiti. His purpose is to continue negotiations for organization of lighting and telephone plants. He desires catalogues from manufacturers of equipment in these lines.

O., La Grange—Election held July 28 authorized electric light bonds to amount \$20,000.

O., Lima—City voted Aug. 12 on \$100,000 street lighting bonds. David L. Rupert, City Aud.

O., Middletown—Thirteen villages in this vicinity will construct electric light plant in Oxford at \$35,000, and Middletown Electric Co. will string wires from its plant at Oxford at cost of \$25,000.

Okla., Stonevill—Has voted \$20,000 6% 25-year electric light bonds.

Tex., Bryan—An election will be held Aug. 26 to vote the bond issue of \$75,000

for the purchase and improvement of power plant from H. T. Lawter & Sons.

Tex., Brownwood—Further extension of high-power lines of Texas Power and Light Co. from this point is announced. A line will be built from Dublin to DeLeon and Gorman, the Brownwood plant furnishing the power. The line to Stephenville from Dublin will be completed soon and connections made.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

***Kan., Independence**—City Comrs. let contract for white way for Independence to Connor Construction Co., of Kansas City, whose bid was lowest of seven bidders. The work must be done in ninety days. The wiring will be done by Kansas Gas and Electric Co.

FIRE

Ala., Birmingham—Election will be held Aug. 18 on bond issue of \$500,000 for purpose of acquiring real estate for buildings for Fire Dept.

Ia., Des Moines—Bids were closed July 31 on \$100,000 bond issue for fire equipment.

Mass., Sturbridge—Town will buy a motor pumping fire truck. Address the Mayor.

Mich., Houghton—Committee has been appointed to report on apparatus needed by fire department.

Mo., St. Charles—City contemplates purchase of combination motor pumper and hose car, also combination chemical and hose car. H. Hachtmeyer, Jr., Chief Fire Dept., and F. H. May, Chmn., Comn. on Water Works and Fire Protection.

N. Y., Schenectady—Fire Chief A. C. Spitzer recommends three small chemical wagons in town of Glenville.

N. Y., Solvay—The issue of \$30,000 5 per cent. Fire Dept. bonds was awarded Sherwood & Merrifield, New York.

N. Y., Falconer—Appropriation has been asked for purchase of fire apparatus. Address Chief of Dept.

N. Y., Bridgehampton—New motor apparatus is to be bought. Address Chief of Dept.

O., Akron—I. S. Myers, mayor, states there will be submitted to popular vote Aug. 12 bond issue of \$155,000 for erecting buildings necessary for fire department, and for purchase of fire engines.

O., East Liverpool—Council voted to purchase triple pumper, and bond issue of \$12,000 will be authorized.

O., East Liverpool—Legal advertising on \$13,000 bond issue will soon be completed and fire chief Thomas Bryan has announced that new combination fire truck and other apparatus will be purchased, and service at Northside fire station will be resumed shortly.

O., Elyria—Bond issue of \$20,000 for purchase of new fire apparatus and for extending, enlarging and repairing fire equipment has passed council.

O., Marietta—Safety Dir. Frank Swan is considering important improvements in better fire protection. He proposes purchase of new pumper for use on the west side at cost of \$15,000.

O., Massillon—Bond issue of \$12,000 is on the market and funds will soon be available for purchase of fire apparatus. R. B. Crawford, Auditor.

O., Zanesville—City will vote Aug. 12 on purchase of fire apparatus. C. W. Tanner, City Clerk.

Okla., Oklahoma City—Election, July 26, on bond issue of \$200,000 for Fire Dept.

Pa., Allentown—Bond issue of \$100,000 will be used to purchase new fire apparatus.

Pa., Emaus—Emaus Fire Co. is considering purchase of motor apparatus. Address Pres. of Company.

Pa., Duquesne—Purchase of fire truck under consideration.

Pa., Farrell—The erection of new fire department building at corner of Wallis Ave. and Hayward St., provides for

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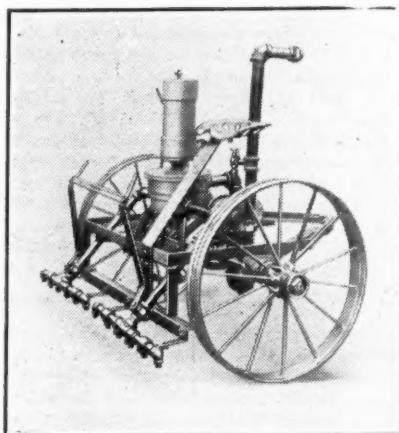
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OFFICIAL ADVERTISING

Pennsylvania State Highway Department, Harrisburg, Pa.—Sealed proposals will be received at the State Capitol until 10:00 A. M., August 18, 1919, when bids will be publicly opened and scheduled and contracts awarded as soon thereafter as possible for the construction of the following bridges:

County	Township	Route	Station	Span in Feet
Armstrong	Bethel	203	526/70	14
Armstrong	Boggs	66	1549	12
Armstrong	Brady's Bend	214	1379	32
Armstrong	Brady's Bend	214	1397	36
Armstrong	Brady's Bend	214	1416	36
Armstrong	Brady's Bend	214	1428	14
Armstrong	Brady's Bend	214	1434	36
Armstrong	Brady's Bend	214	1486	18
Armstrong	Brady's Bend	214	1586	18
Armstrong	East Franklin	251	1718/39	20
Armstrong	Gilpin	203	712/10	10
Armstrong	Mahoning	66	1131	18
Armstrong	Plum Creek	67	882/71	18
Berks	Cumru	274	203	10
Berks	Penn	310	379	26
Berks	Robeson	147	1687	10
Berks	Robeson	274	379	16
Berks	Robeson	274	615	8
Berks	Robeson	274	675	12
Berks	Robeson	328	28	22
Berks	Robeson	328	30	18
Cameron	Gibson	105	715	12
Cameron	Grove	105	768	12
Cameron	Portage	100	303	1 abut.
Cameron	Shippin	277	848	6
Cameron	Shippin	277	871	6
Clarion	Shippin	277	977	16
Clearfield	Porter	66	824/50	16
Clearfield	Bell	62	893	20
Clearfield	Bell	221	2594/50	16
Clearfield	Bloom	59	967	20
Columbia	Fishing Creek	16	667/73	8
Crawford	Sadsbury	83	217/46	12
Crawford	Summerhill	295	108/68	12
Erie	Franklin	272	890	12
Erie	Franklin	272	921	12
Fayette	Washington	247	220/92	20
Fayette	Perry	288	901/55	10
Indiana	East Wheatfield	302	1702/69	8
Indiana	White	228	211	12
Jefferson	Clover	237	440/60	12
Jefferson	Washington	59	2032/15	14
Lehigh	Upper Milford	158	1580	12
Lehigh	Upper Milford	158	1671	24
Lehigh	Washington	163	884	10
Monroe	Barrett	171	1289/50	20
Monroe	Paradise	169	405	14
Monroe	Pocono	168	356/35	10
Monroe	Pocono	168	373	10
Montgomery	Lower Merion	201	212/48	2-28
Pike	Lehman	167	1059	14
Schuylkill	Union	140	467	16
Sullivan	Colley	217	838/80	12
Susquehanna	Gibson	365	2144/75	10
Susquehanna	Harford	174	1275/64	12
Susquehanna	Marmony	227	1722/66	12
Susquehanna	New Milford	174	1572/46	12
Susquehanna	Oakland	10	1100	8
Venango	Cranberry	91	330/83	10
Warren	Pittsfield	89	2488	36
Wayne	Manchester	365	3242	20
Wyoming	Eaton	13	263	16
Wyoming	Eaton	13	284	12
Wyoming	Lemon	12	216	10
Wyoming	Mehoopany	13	601/80	16
Wyoming	Mehoopany	13	669/80	14

Plans and specifications will be furnished upon application to State Highway Department, Harrisburg, Pa. They can also be seen at office of the State Highway Department, Harrisburg; 1001 Chestnut Street, Philadelphia, and 904 Hartje Building, Pittsburgh, Pa. LEWIS S. SADLER, State Highway Commissioner.

Pennsylvania State Highway Department, Harrisburg, Pa.—Sealed proposals will be received at the State Capitol until 10:00 A. M., September 2, 1919, when bids will be publicly opened and scheduled and contracts awarded as soon thereafter as possible for the reconstruction of the following pavements: 37,001 linear feet of One Course Reinforced Concrete and Hillside Vitri-fied Brick and 7,857 linear feet of either Bituminous Surface Course on a Concrete Foundation and Hillside Vitri-fied Brick or One Course Reinforced Concrete in Adams County; 16,579 linear feet of Reinforced Concrete in Butler County; 16,129 linear feet of One Course Reinforced Concrete in Carbon County; 12,355 linear feet of either Bituminous Surface Course on a Concrete Foundation or One Course Reinforced Concrete in Centre County; 32,128 linear feet of Bituminous Surface Course (penetration method) on a Telford Foundation in Chester

County; 10,507 linear feet of Reinforced Concrete in Clarion County; 10,822 linear feet of One Course Reinforced Concrete in Clearfield County; 4,265 linear feet of either Bituminous Surface Course and Hillside Vitri-fied Brick on a Concrete Foundation or One Course Reinforced Concrete in Clinton County; 18,514 linear feet of One Course Reinforced Concrete and Hillside Vitri-fied Brick and 18,619 linear feet of either One Course Reinforced Concrete and Hillside Vitri-fied Brick or Two Course Reinforced Concrete and Hillside Vitri-fied Brick in Crawford County; 64,227 linear feet of One Course Reinforced Concrete and 7,900 linear feet of either Bituminous Surface Course and Hillside Vitri-fied Brick on a Concrete Foundation or One Course Reinforced Concrete and Hillside Vitri-fied Brick in Erie County; 3,812 linear feet of One Course Reinforced Concrete in Indiana County; 31,268 linear feet of either One Course Reinforced

Concrete or Vitri-fied Brick in McKean County; 24,049 linear feet of either Bituminous Surface Course on a Concrete Foundation and Hillside Vitri-fied Brick or One Course Reinforced Concrete in Mifflin County; 12,935 linear feet of either Bituminous Surface Course on a Concrete Foundation or One Course Reinforced Concrete in Potter County; 32,320 linear feet of either Bituminous Surface Course on a Concrete Foundation or One Course Reinforced Concrete in Snyder County; 6,191 linear feet of One Course Reinforced Concrete and Vitri-fied Brick in Susquehanna County; 24,113 linear feet of either Bituminous Surface Course on a Concrete Foundation or One Course Reinforced Concrete in Tioga County; 7,936 linear feet of One Course Reinforced Concrete in Warren County, and 4,136 linear feet of Bituminous Surface Course on a Concrete Foundation in York County. Bidding blanks and specifications may be obtained free, and plans upon payment of \$2.50 per set, upon application to State Highway Department, Harrisburg. No refund for plans returned. They can also be seen at office of State Highway Department, Harrisburg; 1001 Chestnut Street, Philadelphia, and 904 Hartje Building, Pittsburgh. LEWIS S. SADLER, State Highway Commissioner.

Pennsylvania State Highway Department, Harrisburg, Pa.—Sealed proposals will be received at the State Capitol until 10:00 A. M., August 19, 1919, when bids will be publicly opened and scheduled and contracts awarded as soon thereafter as possible for the reconstruction of the following pavements: 21,299 linear feet of Reinforced Concrete and Hillside Brick in Allegheny County; 11,640 linear feet of Reinforced Concrete in Armstrong County; 56,111 linear feet of Reinforced Concrete in Bedford County; 812 linear feet of Vitri-fied Brick in Bucks County; 13,232 linear feet of Reinforced Concrete and Hillside Brick in Cambria County; 5,651 linear feet of Reinforced Concrete in Carbon County; 29,586 linear feet of Bituminous Macadam (Penetration Method) on a Telford Foundation in Chester County; 7,314 linear feet of Bituminous Macadam (Penetration Method) on a Telford Foundation in Delaware County; 4,101 linear feet of Vitri-fied Brick in Fayette County; 71,063 linear feet of Bituminous Surface Course on a Concrete Foundation or Reinforced Concrete in Lackawanna and Wyoming Counties; 16,218 linear feet of Reinforced Concrete in Lehigh County; 31,418 linear feet of either Bituminous Surface Course on a Concrete Foundation or Reinforced Concrete in Luzerne County; 15,683 linear feet of either Bituminous Surface Course on a Concrete Foundation or Reinforced Concrete in Lycoming County; 2,431 linear feet of Reinforced Concrete in Mercer County; 8,226 linear feet of Reinforced Concrete in Northampton County; 22,287 linear feet of Reinforced Concrete in Washington County, and 89,002 linear feet of Reinforced Concrete and Hillside Brick in Westmoreland County. Bidding blanks and specifications may be obtained free, and plans upon payment of \$2.50 per set, upon application to State Highway Department, Harrisburg. No refund for plans returned. They can also be seen at office of State Highway Department, Harrisburg; 1001 Chestnut Street, Philadelphia, and 904 Hartje Building, Pittsburgh, Pa. LEWIS S. SADLER, State Highway Commissioner.

Bids received until August 26, 1919.

Highway Work

Office of the State Commission of Highways
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at their office, No. 55 Lancaster Street, Albany, N. Y., at 1:00 o'clock P. M. on Tuesday, August 26, 1919, for the improvement of the following highways:

MONTGOMERY.—Two highways—3.70 and 3.63.

RENSELAER.—One highway—1.27.

SARATOGA.—One highway—9.06.

SUFFOLK.—One highway—5.86.

And also for the Completion of the Following Highways:

CAYUGA.—Two highways—6.06 and 5.45.

CHAUTAUQUA.—One highway—5.65.

FRANKLIN.—One highway—10.36.

LIVINGSTON.—One highway—8.34.

MADISON.—Two highways—6.54 and 5.65.

OSWEGO.—One highway—6.36.

SENECA.—One highway—2.13.

ULSTER.—One highway—10.24.

WASHINGTON.—One highway—2.06.

And also for the Completion of the Following Repair Contract:

CORTLAND.—One contract—cement concrete construction.

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the office of the Division Engineers in whose division the roads to be improved and completed are located. The addresses of the Division Engineers and the counties of which they are in charge will be furnished upon request.

The especial attention of bidders is called to "General Information for Bidders" on the itemized proposal, specifications and contract agreement.

FREDERICK STUART GREENE,
Commissioner.

ROYAL K. FULLER, Secretary.

Bids received until August 19, 1919.

Notice to Sewer Contractors

KENDALLVILLE, IND.

Notice is hereby given by the Common Council of the City of Kendallville, Ind., that sealed bids and proposals will be received by the City Clerk on or before 8:00 o'clock P. M., August 19, 1919, for the material and work to construct the following public improvements, according to plans and specifications on file in the office of W. E. Sawyer, City Civil Engineer, in said city:

Under Improvement Resolution No. 48, providing for storm water sewer on following streets: Garden, Diamond, Sheridan, Clark, Burnam and East Streets. Engineer's estimate, \$13,904.20.

Under Improvement Resolution No. 47, providing for storm water sewer on following alley and streets: Sheridan Street Alley, Railroad, Rush, Summit, William, Oak, Mitchell, Harris and Richmond Streets. Engineer's estimate, \$15,933.60.

Separate bids, proposals, contracts and bonds will be required under each above-named resolution, and all bidders must accompany bids with certified checks for not less than two and one-half per cent. (2½%) of Engineer's estimates.

Said sewers above-mentioned shall be wholly paid for out of the General Fund of said city, and not by assessment.

OSCAR E. MICHAELIS, City Clerk.

Bids received until August 28, 1919.

Notice to Sewer Contractors

XENIA, O.

Sealed bids will be received by the City Commission of the City of Xenia, O., at the office of the City Auditor, until noon of August 28, 1919, for furnishing labor and material necessary to construct pavement, storm and sanitary sewers and other street improvements. The approximate yardage of pavement is sixty thousand (60,000).

A bond satisfactory to the City Commission will be required of the successful bidder in the sum equal to fifty per cent. (50%) of the estimated cost of the work. Each bid

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shall be accompanied by a sufficient bond or certified check for a sum equal to five per cent. (5%) of the amount of the bid submitted.

Each street shall be bid upon separately, and all bids must state the price of labor and material separately for each item in the schedule of quantities.

The City Commission reserves the right to reject any and all bids, and to waive defects in bids to the interest of the city. Blank forms of bids and instructions to bidders can be obtained from Kenyon Riddle, City Manager, Xenia, O.

By order of the City Commission, Xenia, O.

KENYON RIDDLE, City Manager.

GEORGE H. STOKES, City Auditor.

Bids received until August 21, 1919.

Notice to Sewer Contractors

SENTOBIA, MISS.

The Town of Senotobia, Miss., will receive bids until 8:00 P. M., August 21, 1919, for constructing a system of sanitary sewers. The work contemplated will include about 8 miles of 6-inch to 12-inch pipe sewers, together with manholes, flush tanks, etc. For further information and for specifications and form for proposal address H. I. GILL, Town Clerk, Senotobia, Miss.

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Practical Street Construction.

By A. Prescott Folwell.

A new book devoted to the practical design and construction of streets. The only one treating of alignment, grade and cross sections, the location of sewers, manholes, fire hydrants, fire alarm boxes, street signs, lighting and other features of the modern city street. Each is considered in respect to its interrelation with all the others. 151 illus.; 242 pp. Price, \$2.00.

Dust Preventives and Road Binders.

By Prevost Hubbard.

Deals with the dust nuisance and its prevention. This book takes up in detail the chemical composition and physical properties of preventives and binders of every description. The testing, chemical and physical, is described. 416 pp. Price, \$3.00.

Highway Engineers' Handbook.

By Wilson G. Harger and Edmund A. Bonney.

The second edition of this book brings the material on top courses up to date. Much data on tests, design, costs, maintenance and specifications have been added, totaling about 100 pages. The arrangement of the book is the same. 609 pp. Price, \$3.00 net.

The American Road.

By James I. Tucker.

A non-technical manual on construction, administration and economics of earth roads for practical road builders. Written for local road officials, superintendents, foremen, engineers, county boards, township officers, and all others interested in good roads everywhere. Illustrated with many examples of what to do and what not to do. 235 pp. 47 illus. Price, \$1.67.

Text Book on Highway Engineering.

By Arthur H. Blanchard and Henry B. Drowne.

The foundations and general principles of construction of the various types are discussed. Street cleaning, car tracks, pipe systems and other improvements are dealt with. There is a chapter on economics, administration and legislation. 762 pp. Price, \$4.50 net.

Elements of Highway Engineering

By A. H. Blanchard.

Published in 1915. Is written with a view of emphasizing fundamental principles and is especially adapted for civil engineering students and for general reference. 497 pp. Price, \$3.00 net.

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Municipal Journal and Public Works, 243 West 39th St., New York

building 70x75. It will house at least four pieces of apparatus, but for time being town will own only two.

Pa., Rochester—Council has authorized ordinance to borrow \$20,000 for motorization of fire department. City Solicitor R. E. Hold states that action was taken in view of recent theatre fire in this city.

Pa., Sharon—Fire Chief Joseph Scowden has returned from Meadville, Pa., on visit of inspection to fire department of that city with view of making recommendations to Council as to type of equipment which will be recommended for use in this city.

Pa., West Chester—Fire company intends to buy new apparatus. Address the president.

S. D., Watertown—Fire Chief Wm. McLaughlin has petitioned purchase of additional apparatus.

Va., Norfolk—Fire insurance underwriter recommends purchase of fireboat.

BRIDGES

Cal., Redding—Shasta Co. will build many bridges. First come three concrete bridges on Redding-Tower House lateral. These have to be built for State Hwy. and have to be approved by State Hwy. Comm. Bridge across Salt Creek will be 80 ft. long. The Whiskey Creek bridge will be 23 ft. in length and that across Grizzly Gulch is to be 46 ft. The new bridge across South Cow Creek, on Redding-Millville Rd., will be 240 ft. long, with five piers and two abutments. This bridge alone probably will cost \$12,000. A 60-ft. concrete bridge has to be erected across North Battle Creek in vicinity of Manton. In addition extensive repairs have to be made on the Anderson bridge across the Sacramento.

Ida., Lewiston—County comrs. have been petitioned to call election to vote on proposition of issuing bonds of \$400,000 for purpose of constructing a series of bridges on Clearwater River.

Ida., Twin Falls—A new bridge will be built to span Rock Creek Canyon at west end of Shoshone St. Estimated cost, \$250,000.

Ida., West Union—Plans being prepared for three bridges, one having three 24-ft. concrete slab spans, and two, two 24-ft. concrete slab spans, all 18-ft. roadways. Address Co. Engr. of Fayette Co.

Ind., Indianapolis—Marion Co. has appropriated \$78,000 for repair and construction of bridges.

Kan., Sedgwick—Concrete bridge is to be built over Little River just west of here.

La., Lake Charles—Construction of bridge spanning Sabine River, between Orange Co., Texas, and Calcasieu Parish, may begin soon, according to reports from Louisiana State Hwy. Dept. Chamber of Commerce at Orange, Tex., states that Orange Co. had floated \$1,000,000 road bonds and bridge across Sabine River at point mentioned. Deeming the bridge an interstate proposition, as it would benefit both Louisiana and Texas, the Association suggested that Louisiana and Texas join in making application to U. S. Bureau of Pub. Rds. for appropriation large enough for construction of the bridge.

Neb., Omaha—Platte River bridge will be erected at west end of Center St. paving at cost \$135,000.

N. J., Paterson—Plans have practically been completed for new bridge which will join Westside and Pennington Parks, Paterson, across the Passaic River. Co. Engr. Garwood Ferguson announced that bids for contracts would be solicited in two weeks. It is hoped that approaches will be in readiness before winter halts work and then work can be rushed next spring so that bridge should be ready for use by end of next summer. The bridge will be three-span arch, all of concrete. It will be 50 ft. wide and have 10-ft. sidewalks for pedestrians on either side, and 30-ft. driving space in centre. Surveys have been made and the work will be started as soon as contracts are awarded.

N. Y., Corning—Committee to investigate and report on Chemung River bridge project, planned for foot of Pine St., has been selected by Common Coun-

cil. It is understood that committee will investigate and report on estimated cost of bridge, of necessary street grading in connection therewith, and upon plan to provide necessary money to finance the matter.

N. C., Williamston—Bond issue of \$150,000 for bridges in Martin County has been sold.

O., Lima—Issue of \$26,000 5% bridge bonds was awarded National Bank of Commerce, Columbus, O.

O., Massillon—H. W. Elsass, Chmn., Chamber of Commerce Committee, will recommend appointment of engineer to make preliminary plans for West Main St. Viaduct over three railroads and rivers.

O., Uhrichsville—Auditor Baker, of Tuscarawas Co., and Comrs. of Coshoc-ton and Tuscarawas Cos. ready to advertise Bahmer joint bridge.

Okl., Pryor—An election has been called to vote on issuing bridge bonds to amount of \$175,000.

O., Lima—City will vote Aug. 12 on bonds of \$113,000 for bridges.

Pa., Johnstown—Bridge; \$95,000. Engr., J. R. Crissey, City Hall. J. W. Cramme, City Clk., City Hall. Drawing plans.

Pa., Pittsburgh—Allegheny Co. will build bridge across Ohio River, connecting Pittsburgh & McKees Rocks Boro.

Pa., Sharon—Fruit Ave. bridge repaired. May be replaced next year by new bridge, \$100,000.

S. C., Beaufort—H. C. Orr, bridge engineer, has made survey for bridge from Beaufort to Ladies Island, which will be 3,600 ft. in length and will connect Beaufort with Ladies and St. Helena Island. Estimated cost, \$100,000.

Tex., Ballinger—State Highway Engineer Wickline spent several days conferring with County Comr. Kirk concerning construction of \$50,000 concrete bridge across Colorado River to replace old steel bridge. Plans have been drawn and submitted to highway commission.

Wis., Milwaukee—Preparations are virtually complete for beginning work on North Ave. Viaduct, which is to supplant present North Ave. Bridge.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

***Kan., Emporia**—Contract for concrete bridge near here awarded by Co. Comrs. of Lyon Co., to Koss Construction Co., Des Moines, Ia., at \$46,280.

***Kan., Lawrence**—Contract for bridge awarded to C. C. Clark & Co., Topeka, at \$17,000.

***Mont., Helena**—State Highway Commission, after rejecting bids on three projects and learning that none had been submitted on five others, recently awarded these contracts:

Huntley bridge over Yellowstone, \$63,000 to Security Bridge Co., of Bollings.

Toston bridge, \$55,000, to same.

Belle Crossing bridge, Ravalli County, \$17,000, to Buell Bridge Co. of Missoula.

Carter bridge, in Park County, to Crenshaw Co. of Livingston, \$37,400.

Forsyth Ashland road, Dawson County to C. W. Ball of Forsyth, \$20,000.

***N. J., Elizabeth**—Contract for steel and concrete bridge over Rahway River awarded by Bd. of Freeholders of Union Co., to Chas. Army, at \$26,349.

***Tex., Grange**—Contract for engineer-program was awarded Westcott Engineering Co. of Chicago. The work is to start with corps of engineers on or about Aug. 10. In addition to million dollars voted for roads and bridges the Texas state highway commission will donate \$200,000.

MISCELLANEOUS

Cal., Balboa—Chamber Commerce appointed committee to prepare preliminary plans and submit estimates for reinforced concrete pleasure pier. About \$50,000. H. B. Tudor, Chmn.

Del., Wilmington—City is considering erection of asphalt plant of its own.

D. C., Washington—Favorable report on bill providing additional \$17,000,000 for construction of Alaskan railroad, to meet increased costs, was ordered by House Territories Committee.

Ia., Marengo—Issue of improvement bonds to amount of \$372,000 has been sold to W. H. Bailey, Attorney, of Iowa City.

La., New Orleans—City will receive bids until Aug. 20 on bonds of \$600,000 for public belt railroads of the city.

Mass., Boston—City Council has adopted plans for building teaming tunnel between East Boston and the mainland.

Mich., St. Joseph—Berrien Co. has under consideration proposition of erecting sanatorium at cost of \$120,000. Bd. of Supvrs. expect to take final action in the matter at October session.

Miss., Vicksburg—City contemplates erection of river terminal here.

Mont., Broadus—An election will be held Sept. 2 to vote bonds to amount of \$150,000.

Mont., Bridger—Steps have been taken by prominent residents of Clarke Fork Valley to revive interest in irrigation project proposing to water approximately 56,000 acres of fertile land in Carbon Co. It was one of first projects investigated by Federal Reclamation Service.

N. Mex., Fort Sumner—Fort Sumner land owners have voted on issuance of \$400,000 to be used in completing dam and canals for irrigation of said district.

Ore., Klamath Falls—The \$50,000 terminal fund to be provided by this city has been raised and accepted by Robert E. Strahorn, builder of the municipal railroad, and depot is to be built. Property needed for terminal and depot has been purchased or is under option. Next move toward completing the railroad will be the letting of contract for construction of stretch from Dairy, the present end, to Sprague River, where immense timber and live-stock holdings are located.

Tex., Bay City—\$150,000 bond issue for levee district have been sold. Engineer made survey with view to improving the present levee and strengthening it at its weakest points. The issue will enable the Comr. to widen and build the levee higher so as to put it far above any high-water mark so far reached.

Wis., Milwaukee—Plans and specifications have been completed for new water tunnel to connect shaft at shore end of new water intake tunnel at Lake Park, with proposed pumping station west of Milwaukee River, north of Locust St. Tunnel will be nine feet across and 7,000 ft. long. There is \$480,000 available for the work. It is expected that bids will be advertised for soon. It will take two years to complete the tunnel.

Spain—Firm in Spain desires to purchase pumps and pump machinery of all sorts, such as full line of turbine, centrifugal and steam pumps. Quotations to be given c. i. f. For further information apply to Bureau of Foreign and Domestic Commerce, Washington, D. C. Opportunity No. 30192.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

***Ia., Davenport**—The Walsh Const. Co. was awarded \$250,000 contract by Miami Conservancy Board of Dayton, O., for moving approximately 30 miles of railroad tracks. Tracks to be removed are property of Baltimore & Ohio, the Big Four and the Ohio Electric. Work will include the placing of 100,000 ties, 110,000 cu. yds. of gravel ballast and the laying of 4,800 tons of steel rails. The local concern bid against several concerns as well as the Mitchell Co., of New York, and several Cincinnati concerns.

***Pa., Johnstown**—John Berg, official garbage collector for Johnstown, was awarded the contract for the collection of the garbage of Franklin Borough by the Franklin Council last night and will enter upon his contract Aug. 15. In addition to the contract with the city, Mr. Berg also has a similar contract with Westmont Borough.

WATER WORKS EQUIPMENT

APPROVAL

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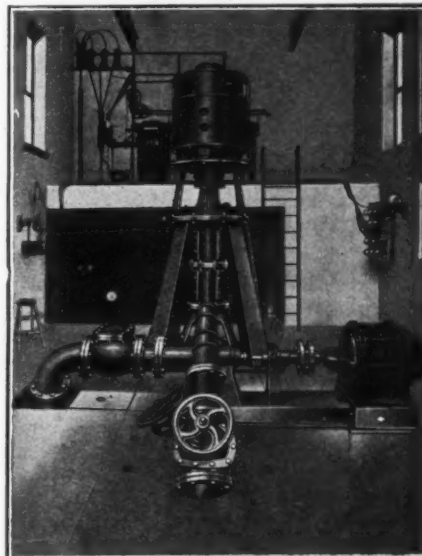
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TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STREETS AND ROADS.

Ind., Burlington. 9 a.m., Aug. 18. Grading, curbing with cement concrete and paving with one-course cement concrete, 7 in. thick.—H. D. Vollmer, City Engr.

Minn., Cloquet. 8 p.m., Aug. 18. Road grader.—J. A. Parks, City Clk.

Minn., Alexandria. 10 a.m., Aug. 28. Gravel loading apparatus, complete with bin, and one 8 to 12-h. p. engine.—V. Thomas, Co. Aud.

N. J., Trenton. 10.30 a.m., Aug. 27. Resurfacing road with gravel involving 13,170 cu. yds., compacted.—State Hwy. Comr.

N. Y., New York. 11 a.m., Aug. 20. Furnishing 160,000 gallons refined asphalt in liquid form and 50 tons of 2,000 lbs. each of refined asphalt in containing packages, 3,500 bbls. Portland cement, 1,000 tons limestone or other suitable inorganic dust, 400 cu. yds. paving gravel, 100 tons paving pitch, 4,000 cu. yds. asphalt sand, 2,000 cu. yds. paving sand, 1,200 cu. yds. binder stone; regulating and grading avenue.—E. Riegelmann, Boro. Pres., Brooklyn.

N. Y., New York. 11 a.m., Aug. 20. Regulating and repaving with permanent asphalt and Grade 1 granite pavements on 6-in. concrete foundation four streets; regulating, grading, curbing and laying sidewalks on two streets.—E. Riegelmann, Boro. Pres., Brooklyn.

N. Y., New York. noon, Aug. 21. Repaving with bituminous macadam; repaving with napped granite block on concrete foundation and wood block on present foundation; repaving asphalt and wood block pavements; repaving with macadam; repaving with bituminous concrete.—C. D. Van Name, Boro. Pres., Richmond, St. George, S. I.

N. Y., New York. noon, Aug. 20. Repaving with granite block on concrete foundation; repaving with vitrified brick.—C. D. Van Name, Boro. Pres., Richmond, St. George, S. I.

N. Y., New York. noon, Aug. 18. Repaving with wood block on a number of streets, involving 2,250 sq. yd. new wood block pavement, 4 in. deep, and 21,300 sq. yds. 3 in. deep.—C. D. Van Name, Boro. Pres., Richmond, St. George, S. I.

N. Y., New York. noon, Aug. 22. Constructing 3,000 sq. ft. concrete sidewalk.—C. D. Van Name, Boro. Pres., Richmond, St. George, S. I.

STREETS AND ROADS.

Conn., Greenwich.—W. S. Wright will receive sealed bids until Aug. 21 for \$100,000 4½ per cent. semi-annual highway bonds.

Del., Wilmington.—New Castle Co. will receive bids until Aug. 19 for \$200,000 4½ per cent. semi-annual highway bonds.

Fla., Mayo.—Lafayette Co. will receive sealed bids until Sept. 1 for \$250,000 5 per cent. semi-annual road and bridge bonds. C. W. Edwards, Clk. of Circuit Court.

Fla., Milton (Santa Rosa Co.).—Clk. of Co. Comrs., H. W. Thompson, will receive sealed bids until Sept. 1 for road and bridge district No. 3 bonds to amount of \$160,000.

Ind., Evansville.—Bd. of Pub. Wks. approves the improvement of 2d, 3d, 4th and 5th Sts. by grading, paving, curbing and guttering. W. F. Wunderlich, Clk.

La., New Orleans.—Clk. of Council was directed to publish notices of Council's intention to provide paving and repaving of following streets and avenues: Birch St., Clio St., Esther St., Irma St., Felicia St., Dufossat St., Baronne St., Sycamore St., St. Bernard Ave.; repaving Rampart St. and Gird St.

Mich., Lansing.—City Council authorizes bond issue of \$264,000 for paving and other street improvements.

Minn., Duluth.—St. Louis Co. will aid in building eight mi. of road in Carlton

N. Y., Albany. 1 p.m., Aug. 26. Improving 9.06 mi. concrete highway.—State Hwy. Comr.

N. D., Grafton. 8 p.m., Sept. 2. Constructing about 6,850 sq. yd. pavement and gutter, 3,743 lin. ft. concrete curb, 1,333 sq. yd. concrete alley pavement.—City Aud.

O., Columbus. noon, Aug. 18. Furnishing following street materials: 60 tons refined asphalt, 80 tons limestone dust, 400 tons lake sand, 2,200 tons bank or river sand, 150,000 old style paving blocks, 200,000 standard block, 300 tons paving pitch, 5,000 tons crushed stone and dust, 500 bbls. Portland cement, 20,000 gals. asphalt road oil.—H. Maetzel, Chief Engr.

O., Columbus. noon, Aug. 19. Grading, draining, curbing and repaving with asphalt over present brick surface; grading, draining, curbing, paving with asphalt and with asphalt or brick on two streets.—H. Maetzel, Chief Engr.

Tex., Dallas. Aug. 18. Furnishing gasoline, motor oil, truck oil and other accessories for motor cars, and trucks for period of one year.—C. E. Gross, Co. Aud.

Tex., Dallas. 10 a.m., Aug. 18. Testing cement and asphalt for Dallas Co. for period of six months.—C. E. Gross, Co. Aud.

Tex., Palo Pinto. 2 p.m., Aug. 20. Constructing about three mi. new dirt road and grading two mi. present road, including construction of six concrete bridges and 17 concrete culverts, fencing, guard rails, grubbing, etc.—Co. Clk.

Del., Wilmington. noon, Aug. 19. Reconstructing road with new macadam.—C. E. Grubb, Co. Engr.

SEWERAGE.

Ga., Cartersville. 2 p.m., Aug. 20. Constructing about 16 mi. sanitary sewers, 8 to 15 in., with appurtenances.—J. B. McCrary Co., Engrs., Atlanta, Ga.

Ind., Sanborn. 2.30 p.m., Aug. 18. Sanitary sewer construction, involving 911 ft. 10-in. sewer pipe, 44 ft. 10-in. cast iron pipe, 1,532 ft. 8-in. sewer pipe.—W. A. Solon, Town Clk.

Ind., Dubuque. 8 p.m., Aug. 21. Constructing 8-in. tile pipe sanitary sewer on three streets, involving 940, 800 and 450 ft.—J. Stuber, City Reporter.

Miss., Senatobia. 8 p.m., Aug. 21. Constructing sanitary sewer system, involving about eight mi. 6 to 12-in. pipe, manholes, flush tanks, etc.—H. I. Gill, Town Clk.

N. Y., Elmira. 11 a.m., Aug. 18. Constructing 800-ft. sewer.—City Engr.

Co., to start from southerly end of Fond du Lac bridge and end at point near Wrenshall Station.

Miss., Greenville.—Election has been carried in favor of \$100,000 bonds for street paving and \$50,000 for city hall.

N. C., Smithfield.—S. T. Honeycutt, Clk. of Johnston Co., will receive sealed bids until Sept. 1 for \$50,000 5 per cent. semi-annual road bonds.

Tex., Alamo.—J. H. Perry, Clk. of Court of Crockett Co., will receive sealed bids until Aug. 30 for \$150,000 not exceeding 5½ per cent. semi-annual road bonds.

Tex., Ranger.—Unless oil development is to be seriously curtailed improved roads must be built from Ranger to Eastland, Eastland to Breckenridge, Breckenridge to Caddo and Caddo to Ranger. Work will require expenditure of \$300,000. Eighty mi. of road, approximately, are to be covered. Immediately the funds are procured, meeting will be held in Ranger, at which the manner of expending the money, through the direction of expert highway engineer or road building company, will be determined.

Wash., Wenatchee.—Chelan Co. Comrs. decided to call special election at which the proposition to issue \$830,000 worth of road bonds will be submitted to Co. It is probable the election will be called for an early date in September.

W. Va., Morgantown.—Mongongalia Co. will receive sealed bids until Aug. 26

N. D., Fairmount. 2.30 p.m., Aug. 18. Constructing sewer system.—W. C. Buck, Cons. Engr., 1245 West Minnehaha Pkwy., Minneapolis, Minn.

O., Columbus. noon, Aug. 18. Furnishing, following sewer materials; 1,900 ft. 4 to 20-in. vitrified sewer pipe, Ys, Ts, curves, catchbasins, lids, tops, manholes and rims, etc.—H. Maetzel, Chief Engr.

O., Columbus. noon, Aug. 19. Constructing two sewers.—H. Maetzel, Chief Engr.

WATER SUPPLY.

N. C., Wilmington. 8 p.m., Aug. 25. Constructing complete waterworks and sewerage systems, involving removing and setting up old 75-h. p. engine, one new 125-h. p. Unaflo type steam engine, two horizontal return tubular boilers (150 h. p. each), two boilers, feed pumps, feed water heater, two air compressors, two air-lift pumping outfits, necessary piping, shafting, pulleys and belting, 250,000 gal. reinforced concrete reservoir (alternate bids on steel), 50,000 gals. steel water tower, 120 ft. to balcony; about 9.5 mi. 2 to 8-in. water main; 9½ mi. 8 to 12-in. sanitary sewers.—W. T. Meadows.

N. D., Fairmount. 2.30 p.m., Aug. 18. Constructing complete waterworks system.—W. C. Buck, Consulting Engr., 1245 West Minnehaha Pkwy., Minneapolis, Minn.

FIRE EQUIPMENT.

Pa., Harrisburg. 2 p.m., Aug. 21. 2,500 ft. fire hose, 2½-in. diameter, with heavy bronze couplings, hose to stand pressure test of 400 lbs. per sq. in.—E. Z. Gross, Supt. Pks. and Public Property.

BRIDGES.

Del., Wilmington. noon, Aug. 26. Repairing bridge.—C. E. Grubb, Co. Engr.

N. C., Raleigh. Aug. 20. Constructing concrete bridge to replace old steel one.—Co. Comrs.

MISCELLANEOUS.

N. Y., New York. 10.30 a.m., Aug. 19. Furnishing 3,000 bags Portland cement.—Henry Bruckner, Boro. Pres., Bronx.

O., Cincinnati. noon, Aug. 25. Furnishing Water Dept. 185,000 sq. ft. triangular mesh re-enforcement for concrete in 64-in. width, rolls 300 ft. long, net section area, 0.153 sq. in.—E. Von Bargen, City Purch. Agt.

for \$325,000 5 per cent. semi-annual road bonds. John M. Gregg, Clk.

Man., Winnipeg.—St. Andrew's municipality proposes to construct 140 mi. of gravel roads to Winnipeg Beach. Estimated cost, \$535,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Received.)

***O., Fremont.**—Modern Construction Co. of this city, has been awarded contract for Barr and Hirt roads in Riley Twp. at bid of \$40,000.

***O., Hamilton.**—Contract for paving with brick the Colerain Pike, from Millville to Oxford, was awarded Andrews Asphalt Paving Co. Road is seven mi. long.

SEWERAGE.

Ind., Buhl.—Ordinance has been passed to establish Local Sewerage Impvt. Dist. No. 4. Estimated cost, \$45,000. Bonds will be issued for same. Also ordinance for Local Sewerage Impvt. Dist. No. 3 passed for construction of sewer system. Estimated cost, \$42,000.

Mass., Brockton.—City will receive bids on \$125,000 sewerage bonds and \$22,000 surface drainage bonds.

Mich., Lansing.—City Council orders construction of sewers in many streets.

Miss., Greenville.—Bond issue of \$75,000 for sewers has been carried.